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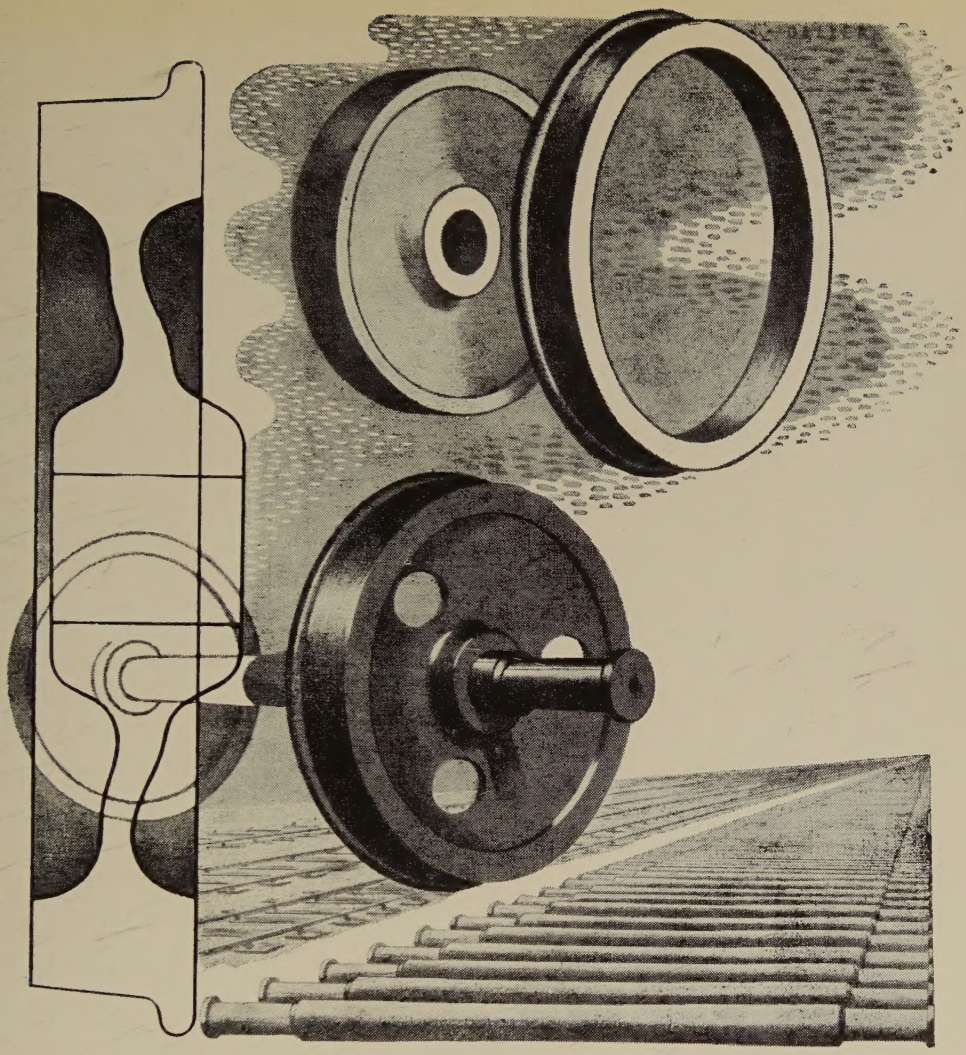

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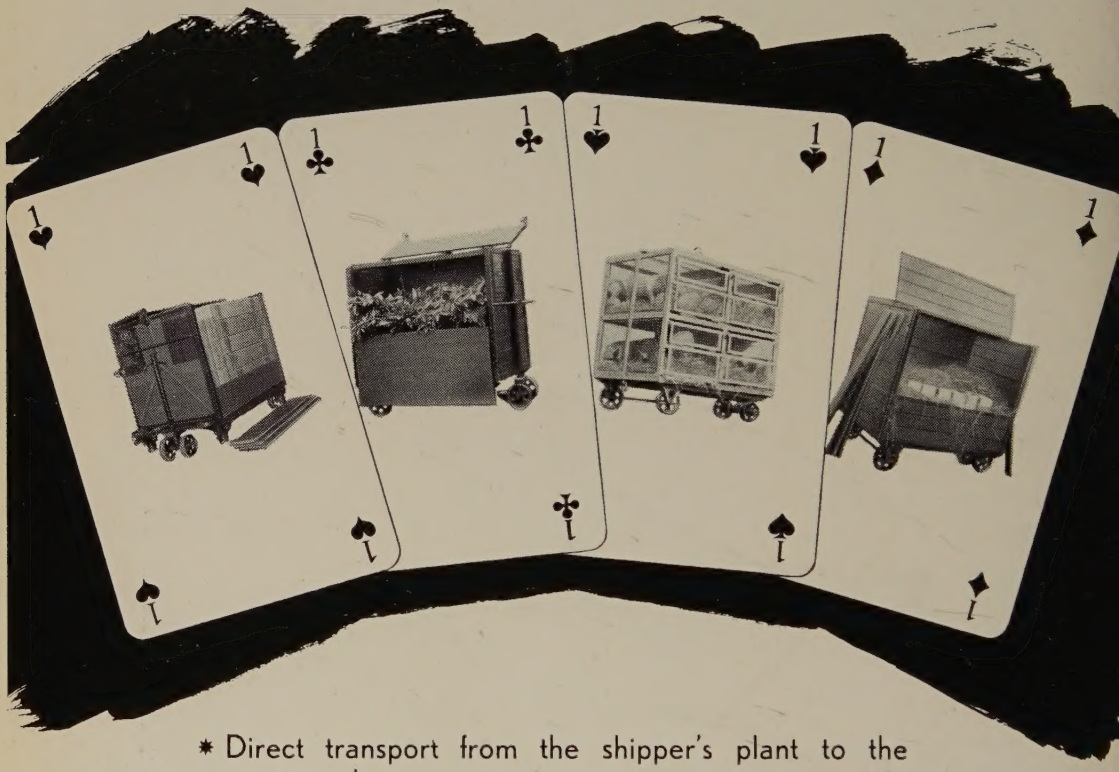

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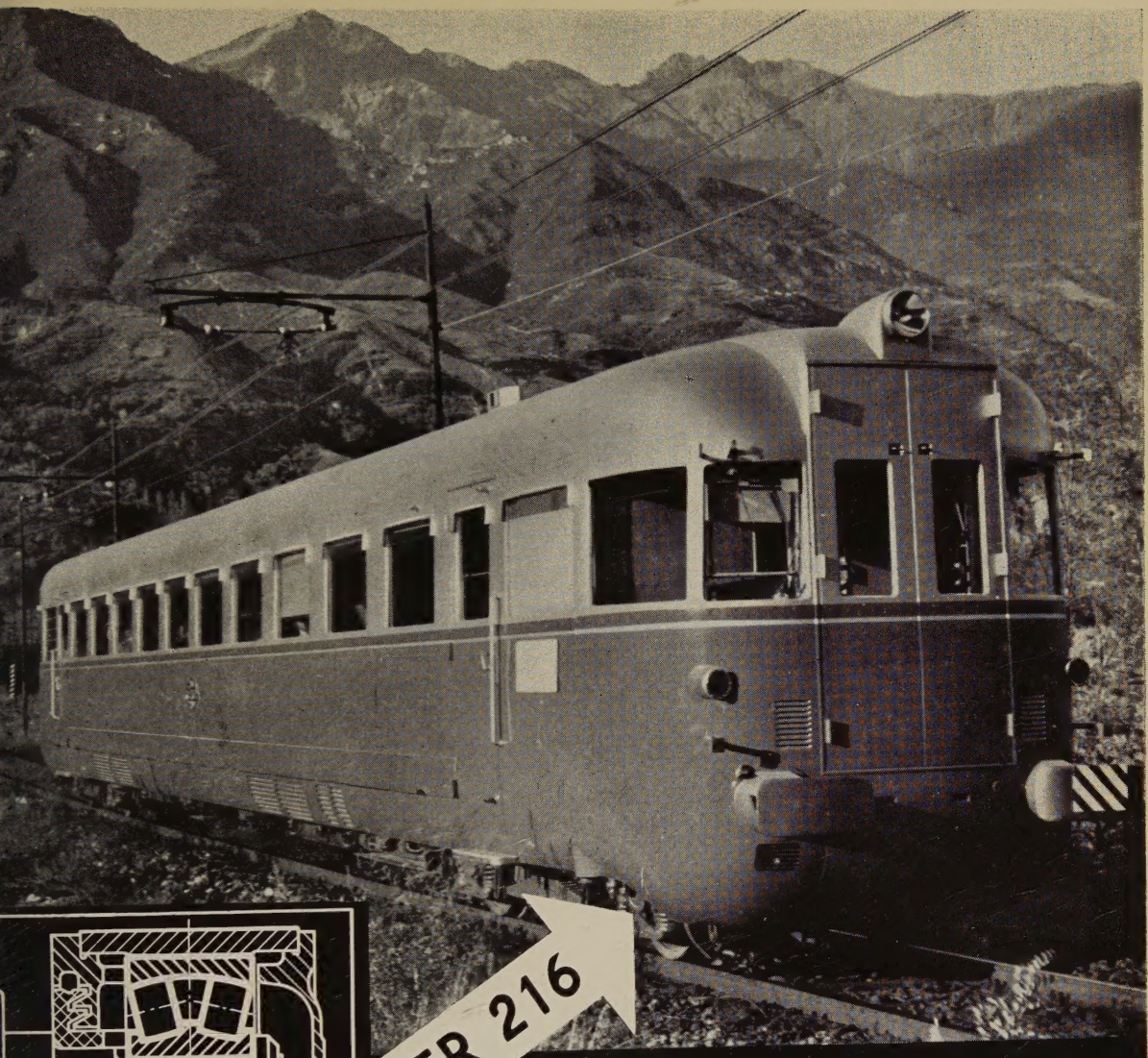

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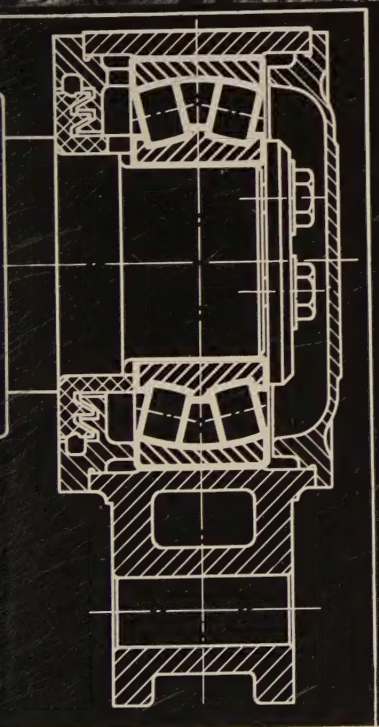

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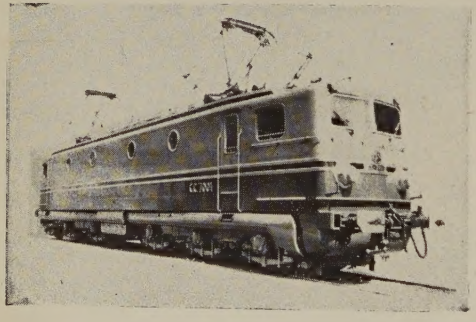

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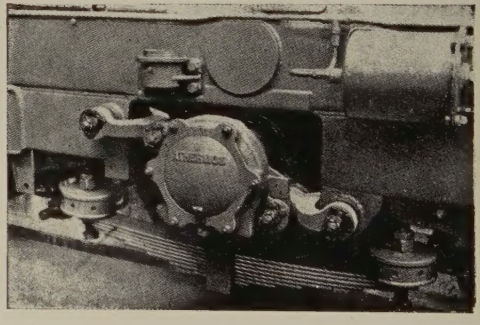

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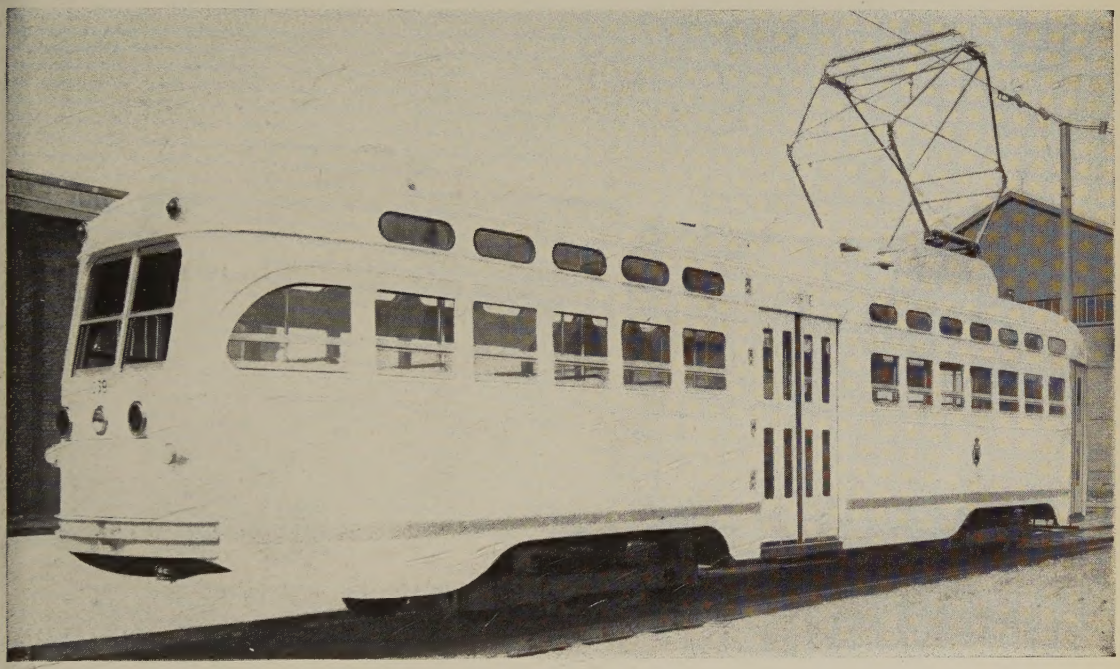

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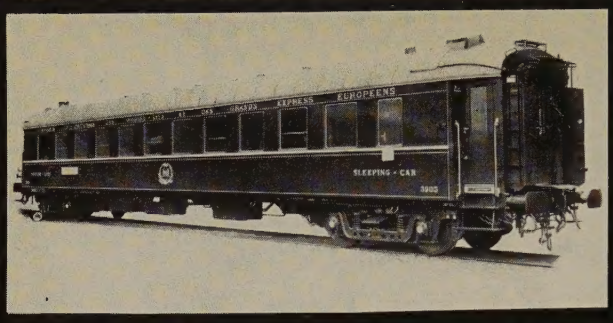

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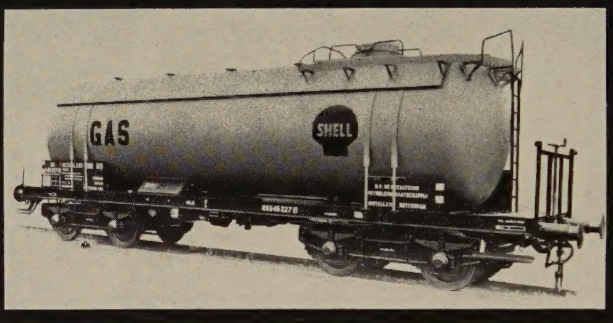

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OF THE

INTERNATIONAL RAILWAY CONGRESS ASSOCIATION

(ENGLISH EDITION)

PUBLISHING and EDITORIAL OFFICES : 19, RUE DU BEAU-SITE, BRUSSELS

Yearly subscription for 1952 : { Belgium . . . . . 700 Belgian Francs / Universal Postal Union. . . 800 Belgian Francs

Price of this single copy : 80 Belgian Francs (not including postage).

Subscriptions and orders for single copies (January 1931 and later editions) to be addressed to the General Secretary, International Railway Congress Association, 19, rue du Beau-Site, Brussels (Belgium).

Orders for copies previous to January 1931 should be addressed to Messrs. Weissenbruch & Co. Ltd., Printers, 49, rue du Poinçon, Brussels.

Advertisements : All communications should be addressed to the Association, 19, rue du Beau-Site, Brussels.

CONTENTS OF THE NUMBER FOR DECEMBER 1952.

	CONTENTS	Page.
I.	The present position as regards construction of passenger coaches on the German Federal Railways, by Rudolf KÖRNER	841
II.	« Shimmy » in passenger car trucks	861
III.	How track is raised and reballasted in Sweden, by TORD FOGELBERG	866
IV.	Reflections on the cleaning of the outside of railway coaches	870
V.	Car wheels dynamically balanced at Burnside shops	872
VI.	Supersonic testing of rail ends, by C. J. CODE	876
VII.	MONTHLY BIBLIOGRAPHY OF RAILWAYS	69
VIII.	ANALYTICAL TABLE OF ARTICLES ACCORDING TO THE DECIMAL CLASSIFICATION . .	1 to 8
IX.	CONTENTS OF THE 29TH YEAR OF THE ENGLISH EDITION	I to VII

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Vol. XXIX. — No. 12. December 1952.

BULLETIN
OF THE
INTERNATIONAL RAILWAY CONGRESS
ASSOCIATION
(ENGLISH EDITION)

[625 .23 (43)]

The present position as regards construction of passenger coaches on the German Federal Railways,

by Rudolf Körner, Ing. dipl., Offenbach (Main).

(*Eisenbahntechnische Rundschau*, No. 3, March, 1952.)

The German Federal Railways (*Deutsche Bundesbahn*) having restarted to build new coaches in series on a large scale, it appears opportune to give an idea of the work done in this field since the war, the principles applied and the building methods used.

During the last few years before the war, the construction of coaches on the Reichsbahn had already reached a remarkable degree of perfection. The adoption of wider compartments starting in 1935, the streamlined shape of express coaches built in 1938/39 and finally the lightened type of coaches for fast and express trains (1) all represented considerable progress as regards increasing comfort and reducing operating costs. The war brought a sudden stop to this evolution. Nothing was built apart from ambulance coaches and simplified types of goods wagons capable of being mass produced. At the end of the war, the stock of coaches was damaged and worn, and the first post-war years saw indescribable overloading of the trains. All efforts had therefore to be directed towards carrying out repairs and it was impossible to think of new stock for the moment.

(1) Dr. Wiens : « Personenwagen in Leichtbauart » (Lightened types of coaches). *Organ für die Fortschritte des Eisenbahnwesens*, 1940, No. 15/16, p. 237; Taschinger : « Leichtbau-D-Zugwagen » (Lightened coaches for express trains). *Organ*, 1940, No. 17/18, p. 273.

I. Post-war designs.

When the designing of new coaches was resumed in 1947, this situation had to be taken into account. The tendency therefore was to create a vehicle with a particularly large capacity, simply but agreeably fitted out, and built as cheaply but also as lightly as possible, and naturally in line with the latest technical developments. It was therefore not a question of repeating the construction to pre-war types, but of striking out on new lines.

Consequently, as Dr. Mielich suggested, it was necessary to design a standard body which could be used on all the types of coaches required; its construction was based on the rectangular load carrying body framework made of standard sections which characterised the pre-war coaches, but unlike the latter this was covered with sheeting which was not stressed. The coaches had to be fitted with bogies of new designs, as well as up-to-date interconnect-

ing gangways with rubber bellows instead of the usual vestibules; they had to weigh 28 to 30 tonnes. At the same time, a body of identical dimensions was designed, the construction of which was suggested by the « Waggonfabrik Urdingen » and characterised by the use of pressed sheet elements, and the stressing of the covering sheeting. In all 8 vehicles were built on these lines : 4 express coaches (D-Wagen) and 4 coaches for fast trains (Eilzugwagen). They supplied invaluable information in the development stages of the evolution which already have been left behind. As Dr. MIELICH has already described them himself (2), there is no point in going into details here; we will go back to their bogies and the new interconnecting gear later on.

The efforts sketched in above logically led to a double decker type which, for the same length of coach, gave a greater number of seats. The first design of double decker provided 150 seats, so that for a total weight originally fixed at 30 tonnes in round figures, the tare was the exceptionally low figure of 200 kg (440 lbs) per seat. This result, it is true, was not completely achieved, owing to the modifications made later on to the design, especially as regards the arrangement of the seats and the interior. Owing to the importance such an innovation was bound to have on future designs, two rakes of three coaches were ordered. The double decker coach was not in itself an innovation, as it had been successfully used on the old Lubeck to Büchen railway. These were however special coaches in the sense that they were coupled together in pairs by a Jakob bogie and drawgear with a central buffer at the ends. The new designs, on the other hand, were standard vehicles which could be included in any train.

(2) Dr. MIELICH : « Planungern und Möglichkeiten im Eisenbahnpersonenwagenbau » (Studies and possibilities in the construction of railway coaches). *Jahrbuch des Eisenbahnwesens*, 1950, p. 119.

II. Designing for mass production.

A. *Principles.*

Whilst these projects and studies were in hand, the monetary reform caused an upheaval in the passenger transport situation. The number of passengers suffered a sharp decline, whilst at the same time, motor competition, especially that of the motor coach, increased to an extraordinary degree. The consequences from the point of view of the rolling stock were that the railway in view of the comfort offered by the motor coach, had in its turn to improve the convenience of its coaches and pay particular attention in designing them to the points where the railway has the advantage over the motorcar. These are essentially : more room and more air space in the coach, which is of particular importance for those making long journeys, freedom to move about in the coach and through the whole rake whilst running, and finally being able to read, work or sleep, since the vibrations on an up-to-date railway coach are much less than those of a motor coach on the road. As a result the following new principles were studied in connection with passenger coaches :

1) really comfortable journeys, capable of attracting passengers and taking into account even the long term requirements of its clients;

2) as light construction as possible, giving the maximum economy in the use of coaches;

3) a design favouring simple and economic maintenance, with simplified and reduced building costs.

B. *Corridor coaches.*

1. *Plan and outer form of the body.*

The comfort of the journey depends above all on the space available for the passenger, i. e. the width of the compartment and of the seats, and correlatively, the type of seat. Up to the present, express coaches have been designed with 5 seats

across in the third class carriages and 4 in the second, these being arranged 2 + 3 in the 3rd class carriages and 1 + 3 in the second class, the sign + representing the corridor.

In the new bogie coaches with a centre corridor, it was decided to adopt the 2 + 2 arrangement in the 3rd class carriages, and 1 + 2 in the 2nd class, and to upholster all the 3rd class seats on the fast and express train coaches. The existing corridor coaches are to be rearranged on these lines at their next general overhaul, but the 2nd class coaches will retain the 2 + 2 arrangement. Figures 1 and 2 show the progress made in the space available for passengers. The comparison also shows how the 1 + 2 arrangement in the 2nd class entirely meets the increased comfort requirements, which justifies the higher cost of transport, especially as the 3rd class seats are new upholstered, though more simply it is true.

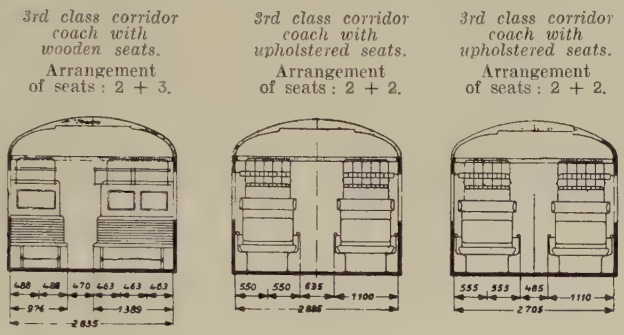


Fig. 1. — Arrangement of seats in the 3rd class corridor coaches (old, rebuilt and new).

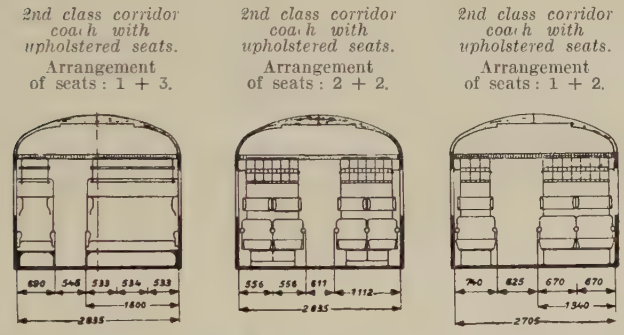

2nd class corridor coach with upholstered seats.
Arrangement of seats : 1 + 3.
690 548 533 534 533
1600
2835
2nd class corridor coach with upholstered seats.
Arrangement of seats : 2 + 2.
556 556 611
1112
2835
2nd class corridor coach with upholstered seats.
Arrangement of seats : 1 + 2.
700 825 670 670
1340
2705

Fig. 2. — Arrangement of seats in the 2nd class corridor coaches (old, rebuilt and new).

In addition, the new standard widths fixed for the compartments are larger : 1 700 mm (5′ 6 7/8″) for 3rd class and 2 100 mm (6′ 10 11/16″) for 2nd. In the existing bogie coaches with centre corridor, the corresponding widths are 1 550 or 1 600 mm (5′ 1 5/16″ or 5′ 3″) for 3rd class and 1 870 or 2 000 mm (6′ 1 5/8″ or 6′ 6 3/4″) for 2nd class, according to

whether they were built before or after 1935. The present stock consists for the most part of vehicles with narrow compartments, so the new widths represent considerable progress.

Owing to this fact, and also it is true as a result of a similar evolution in the construction of railcars, it was almost automatically necessary to lengthen the new coaches by about 5 m (16′ 5″), because the widening of the compartments and the new arrangement of the seats would otherwise have reduced the capacity of the coaches and increased the tare per seat to an inadmissible figure. Related to an equal number of seats, the weight of the 26 m (85′ 3 5/8″) coach is lower than that of the 21 m (68′ 10 3/4″) coach, so that this new coach is necessarily cheaper to buy and operate, especially as the number of bogies per train is reduced. It goes without saying that first of all a careful check was made to make sure these large coaches could be repaired without difficulty in the rolling stock shops.

This coach length of 26.4 m (86′ 7 3/8″) and the space between bogie centres of 19 m (62′ 4″) resulting therefrom, have however the drawback of reducing the width of the vehicle by about 115 mm (4 35/64″). Figures however show that with the new arrangement of seats, this reduced width is not very important and the corridors are still wide enough. The reduced gauge of the coaches is due to formulae applied to take into account their inscription through curves. For safety reasons, which the railway has always made an absolute rule, these formulae add together all possible unfavourable factors although they could never all coincide in practice. It can therefore legitimately be asked whether it would not be possible to be a little more liberal regarding the width in the construction of these coaches ([3]) ([4]). It would be well to have this problem very thoroughly investigated.

The designing of a new coach for fast urban and surburban traffic was undertaken on these bases at the beginning of 1951 and vigorously pursued. Only two fundamental types were provided for: for suburban traffic, a coach with a centre door, and for long distance traffic, a coach without a centre door. Each of these two types had only two variants, the combined 2nd and 3rd class coach, briefly designated as B C, and the 3rd class coach designated as coach C. In the future, there will therefore be only 4 types of coaches altogether for such traffic. Central access has been preferred to double doors at the ends, as previously used on express coaches, because as the Rolling Stock Test Department found, in spite of these double doors, there was a bottleneck owing to the single door between the vestibule and the inside of the coach. It was therefore more logical to make each outside door correspond to one of these inner doors, as is the case with the centre entrance. In addition, this enables the passengers getting onto and getting off the train to be kept separate, thereby obtaining one way traffic, which is no doubt an innovation and certainly an experience for the railway, but already successfully used on buses and tramways. Naturally coaches have to be properly designed for the purpose, with very large vestibules.

Figure 3 gives the plan and elevation of a B C coach with central access, and figure 4 that of a C coach without such access, based on these principles. The slight excentricity of the central access is hardly appreciable and does not in any way detract from the appearance of the coach, but as its vestibule is exactly the same size as a 3rd class compartment, in principle the coach can be divided into

([3]) Dr. WIELICH: « Möglichkeiten der Weiterentwicklung des Eisenbahnwesens vom Wagenbau aus gesehen » (Possibilities of progress in the railway owing to the construction of rolling stock). *Transit*, 1944, July issue.

([4]) Dr. WIENS: « Spur und Profil, die Fesseln der Eisenbahn » (The gauge of the track and the gauge, railway requirements). *Jahrbuch des Eisenbahnwesens*, 1950, p. 89.

two exactly equal parts. This is a far from negligeable advantage as regards construction, and is further increased by the fact that the space occupied by the 5 compartments B, with a total length of 10 290 mm (33′ 9 3/16″) can also be subdivided into 6 C compartments. The figures show this very clearly and make it unnecessary to

C 4 üp : 84 3rd class seats.

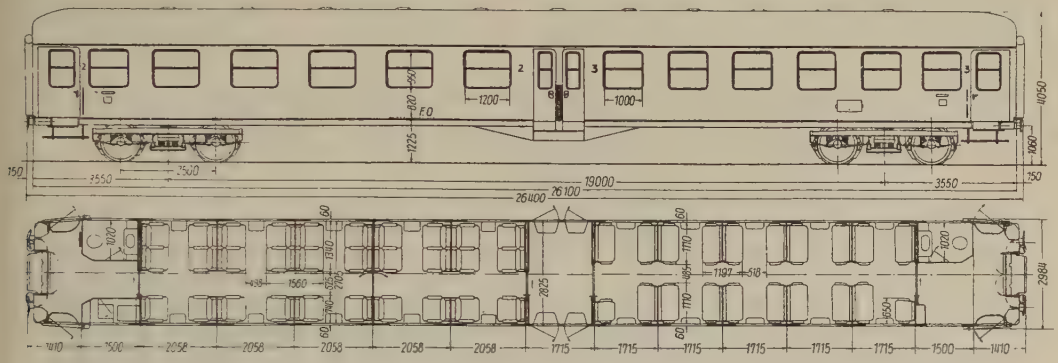
Coach without central door :

BC 4 üp : 30 2nd class seats and 46 3rd class seats.

C 4 üp : 92 3rd class seats.

Finally, unlike on the old express coaches, the new coaches have been given a streamlined shape, because at speeds of

Fig. 3. — Corridor coach 2nd and 3rd classes, with central door.



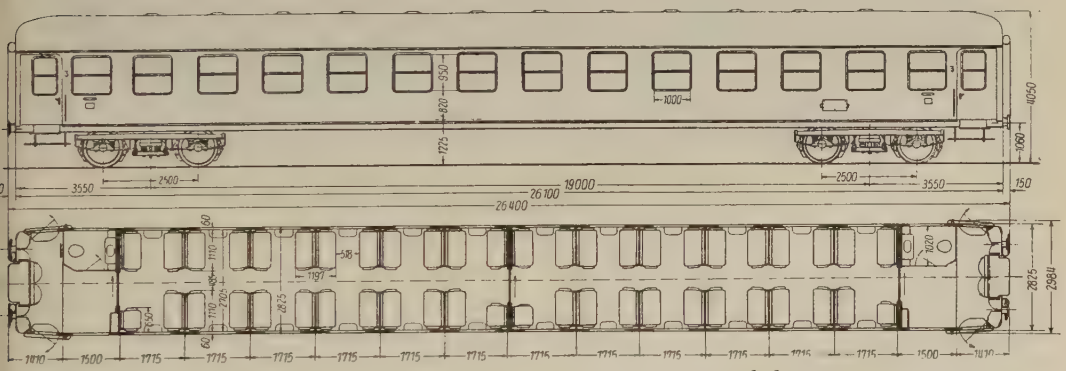


Fig. 4. — 3rd class corridor coach without central door.

give plans of the two other types of coaches. In the vestibule of the B portion of all the mixed coaches, there is a service compartment facing the toilet for the guard or conductor. These coaches have the following seats :

Coach with central door :

BC 4 üp : 30 2nd class seats and 38 3rd class seats.

100 km (62 miles)/h and over — the coaches are intended to run at 120 km (74 miles)/h — the saving in tractive power thus obtained far and away makes good the extra weight and cost.

The designs based on these principles were as early as March 1951 sufficiently advanced for the construction of three prototypes to be undertaken in the Wegmann

and Co. shops at Cassel. These coaches were delivered during July and August. The data given below refer to the results obtained with these trial coaches. Figure 5 gives an outside view of one of them.

2. *Lightened construction of the body of the coach.*

As the new form represents the standard form of the future for passenger coaches — it can be taken that in the future there will be, besides those, only express coaches — and owing to the great shortage of coaches for German internal traffic, it was necessary that the new models be designed in such a way that immediate purchases could be undertaken; we will consider later on to what extent the fundamental conditions given above have been incorporated in their design, although contradictory in many respects. The plan, which we have described, laid down the preliminary conditions for obtaining the first condition, increased comfort. To meet the second, it was necessary to keep the tare of the coach to as low a level as possible, in order to reduce traction costs, in spite of the considerable increase in space offered per passenger. It is difficult to give an exact figure for the total saving obtained per ton of weight reduction, because different factors cannot be precisely calculated, amongst them the wear of the permanent way and the running gear owing to the lightening of the vehicles, and because the saving in tractive power alone depends to a large extent on the annual mileage of the coaches, the number of stops and the profile of the lines. It appears however that the figure of 400 R. M. per tonne of weight reduction per annum given in various pre-war publications should be at least doubled owing to present prices.

For this reason, since welding made it technically possible, lightened construction has been greatly favoured by the German and other railways. Even before the war, for example, it gave remarkable results in the construction of railcars for the Reichsbahn; in the case of coaches, we might mention the German light weight coaches which we have already spoken about, as well as the lightweight metal coaches of the Swiss Federal Railways, which procured many advantages for that Administration, both from the operating and the publicity points of view. As far as the German Federal Railways are concerned, it must be added that the changes in the type of traction to be expected in the future will see to some extent the advent of Diesel traction. This is a consideration which must not be neglected in designing the new coaches : in spite of its increased length, its

Fig. 5. — Corridor coach, 2nd and 3rd classes, with central door.

weight must not appreciably exceed the limit of 30 t in order to obtain the necessary acceleration on starting and speeds on up gradients required with a given power of Diesel locomotive.

In the construction of the body, the weight reduction was obtained hitherto by the general use of steel pressings, in particular for the frame cross stays and the body frame members, or by making the pillars and cross stays in the form of open girders or box beams with chamfered

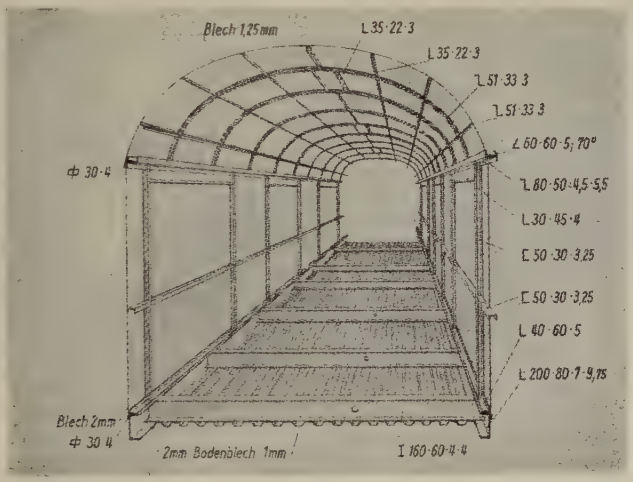


Fig. 6. — Framework of the body.

Blech = sheet. — Bodenblech = floor sheeting.

sheets. This was the type of construction adopted on the latest light weight coaches of the Reichsbahn. But owing to the present position of the steel market, it appeared wiser to avoid using sheet and pressed parts for the framework of the body as much as possible, making the latter entirely from standard light sections, which appeared easier to get than special pressed parts whilst steel was in such short supply. This also appeared likely to reduce the cost of manufacture. In this way was obtained a framework made of sections covered on the outside with 2 mm (0.07 in.) thick sheet in the case of the sides, 1.25 mm (0.044 in.) in the case of the roof and 1.5 mm (0.059 in.) for the floor, fixed by spot welding in such a way that it is under stress and gives the body the form of a load carrying tube. Figure 6 shows this extremely simple form of construction.

In the construction of the railcars, which on the Bundesbahn is confided to the Munich Central Office, at the suggestion of M. TASCHINGER, President of the Department, another solution was adopted. The design of body on the new triple railcars now under construction which are to be put into service during 1952 is more like that of the construction of a hull; wherever possible pressings and welded chamfered sheet girders are used and thereby produces a self-supporting tube in a more marked way. It is not however possible to compare the services obtained from and the economy of the two types of construction until the results of mass production are known with sufficient experience of their behaviour in service.

A comparison with the lightened corridor coach of the latest pre-war type as described by Dr. WIENS [1] is the best

illustration of the results obtained with the new coach from the weight reduction point of view. In view of the considerable differences in the dimensions and internal arrangement of the two vehicles, it is true it is not possible to compare their absolute weight directly, and these must be related to units of comparison, for example per metre of length of frame or seat. If the C 4üp 39 (3rd class bogie coach with central corridor and bellows built in 1939) has 84 non-upholstered seats arranged 2 + 3 in a body 20.15 m (66′ 1 9/32″) long, the C 4üp 51 without centre doors, the only comparable coach, has 92 upholstered seats arranged 2 + 2, in a body 26.1 m (85′ 7 9/16″) long. The old coach weighed 25.5 t, the new weighs 31.025 t, this figure having been obtained by weighing one of the prototypes and making adjustments as regards the centre part since all the prototypes have centre doors. Thus we get 1 267 kg (2 791 lbs) per metre length of body for the 1939 coach and 1 190 kg (2 622 lbs) for the 1951 coach. So that it will be seen that although rolled sections have been used exclusively for the framework of the body, the construction has still been reduced in weight.

In order to make a comparison of the weight per seat under rational conditions, which in sum is the factor which determines the cost of transport, the C 4üp 39 would have to have the same arrangement of seats as the C 4üp 51, which will be done at the next general overhaul. It will then have 72 seats, i.e. a weight per seat of 354 kg (780 lbs), whereas in the new coach the weight is only 337 kg (742 lbs). In this comparison no account has been taken of the fact that upholstering the seats increases the weight, nor of the fact that the compartments which are 100 mm (3 15/16″) bigger give passengers more room. Finally, if these figures are compared with those for the old types (weight per seat about 450 kg = 991 lbs), the progress made in lightened construction is still more striking.

But weight reduction must not at any price be allowed to interfere with the safety or comfort of the passenger. For this reason the Bundesbahn has made its new designs undergo stringent compression and load tests on the body during which the stresses and deformations are measured. The process has already been described in some detail on several occasions, so that we will merely refer the reader to these publications ([5]). The body of the new coach was submitted to a horizontal compression of 200 t applied on the buffers. The stresses which amounted to 1 600 to 1 700 kg/cm² (22 757 to 24 179 lbs per sq. inch) remained within permissible limits, and diminished on a more or less gradual scale from 1 700 kg/cm² at the side frame to 300 kg/cm² (4 267 lbs per sq. inch) in the roof. In the diagonal compression tests on two oblique buffers, a force of 40 tonnes gave rise to a maximum stress of 600 kg/cm² (8 534 lbs per sq. inch). In the two tests these values remained within the same limits as on the express coaches. No permanent deformation of any importance was measured. A load test under 22 t plus 10 t for the missing internal fittings, produced a maximum stress of 570 kg/cm² (8 107 lbs per sq. inch) in the main cross member. The deflection of the side frames amounted to 5.65 mm (15/64″), which is normal in view of the distance between bogie centres, and corresponds more or less to the figures measured on coaches built before the war. The actual frequencies were calculated from the deflection oscillations of the body taken during tests on the line; in the centre of the coach they are 10 to 11 periods, which is also an acceptable value. The construction therefore complies with operating and safety requirements.

In the case of the static tests, it has been objected that the compression stresses were too high, which made the coaches unneces-

([5]) TASCHINGER : « Festigkeits- und Zerstörungsversuche an Wagenkasten » (Resistance and destruction tests on coach bodies). *Organ*, 1939, No. 20, p. 385.

sarily heavy and costly. In addition, the method does not correspond with what actually occurs in the coaches under shocks ([6]). Yet this method has the backing of a great many tests organised by the Munich Central Office in collaboration with the Rolling Stock Test Department since 1938, which TASCHINGER has reported in detail in the article already mentioned ([5]). The same author has recently gone into this problem at even greater length ([7]). His article can be summed up as follows: the static test method is that which gives the best chance of determining in an unexceptional fashion any possibly weak points in the design, and consequently makes it possible to obtain the highest degree of safety. If the German railways remain faithful to this method, they are thereby following the practice of the principal foreign railway administrations.

3. *Running gear and stability in running.*

The running stability of coaches depends in the first instance on the bogie. Those of the new coaches are of a new type used for the first time on the experimental coaches mentioned at the beginning of this article, then on the double-decker coaches. This bogie was described in an article by Dr. MIELICH ([8]) so that we need only refer briefly to its principal characteristics; these are:

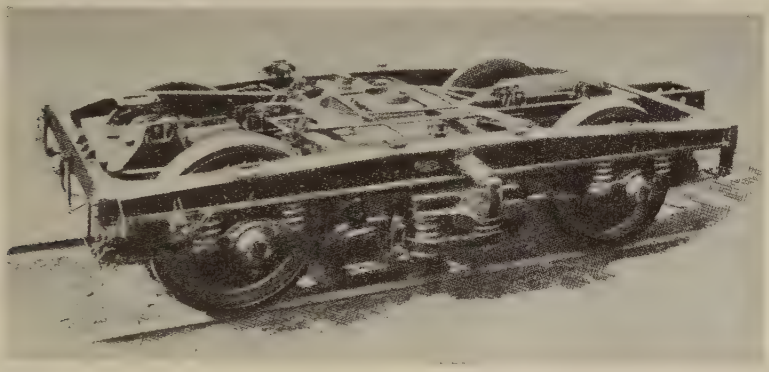


Fig. 7. — « Minden-Deutz 1950 » type bogie with compressed air brake included.

a) the guiding of the axles in the framework by means of horizontal guides consisting of a leaf of a spring, which assures good running stability on the level and at the same time does away with one of the chief wearing parts of the old types of axle box, the guides;

b) the exclusive use of frictionless helical springs for the bolster and bogie frame, together with special oil bath shock

([6]) Dr.-Ing. CROSSEK : « Das Schienenfahrzeug und der leidige Pufferstoss » (The railway vehicle and the destructive buffer shock). First publication of the « Aluminiumberatungstelle e. V. », Grevenbroich, « Aluminium im Verkehrswesen », p. 32.

([7]) TASCHINGER : « Die Beanspruchung der Eisenbahnwagen beim Aufstoss unter besonderer Berücksichtigung der dabei anzunehmenden Stosskräfte » (The stressing of wagons on running into the buffers, taking into account the shocks to be allowed). *Eisenbahntechnik*, Nos. 4 and 5, 1951, pp. 80 and 112.

([8]) Dr. MIELICH : « Konstruktive Möglichkeiten zur Ersielung eines ruhigen Wagenlaufes von Eisenbahnfahrzeugen » (Devices to obtain running stability on railway vehicles). *Glasers Annalen*, 1951, No. 9, p. 217.

absorbers, or experimentally, rubber shock absorbers.

Figure 7 shows one of these bogies in the form used on the double-decker coaches. In this case, unlike the normal type, it was necessary to fit all the braking equipment on the bogie owing to the way the central portion of the coach came right down; in these new coaches, on the contrary, the brake will be suspended from the floor as usual. The figure shows very clearly the hydraulic shock absorber for transversal oscillations of the bolster; the position of this is however to be modified; it will be inclined 30° from the horizontal in order to damp out vertical oscillations as well.

With the double-decker rakes, the first of which has already covered more than 100 000 km (62 000 miles), the bogie has undergone extremely severe loading tests, as these trains have always run overloaded, often very considerably. It was inevitable that any defects, inseparable from all new designs, should show up in a particularly marked fashion. This happened in the present case, but it provided also an excellent opportunity to remedy it. The researches are not yet concluded, but it can already be taken as certain that the new bogie is superior to the old types both from the point of view of stability in running, and reduced wear and simplified maintenance. As the weight of 4.6 t per bogie (including the dynamo but not the axles and axle boxes) is, in its turn, much lower than that of former types, all these properties taken together mean that real progress has been made in the fundamental conditions laid down above.

To prove that this is so from the point of view of running stability, the importance of which is decisive as regards comfort, we have shown in figures 8 and 9 the recording strips of tests on the line carried out on the same section of the Lehrte-Isenbüttel line, one with a coach fitted with bogies of the « Görlitz III quadruple suspension light type » (fig. 8) and the other with one of the new coaches (fig. 9). The great

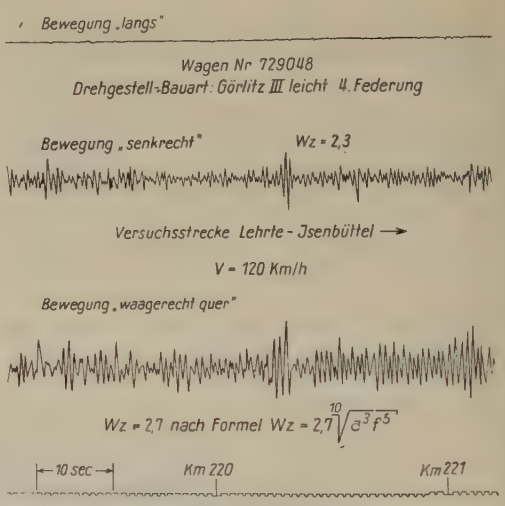


Fig. 8. — Graph of a test on the line with « Görlitz III light type quadruple suspension » bogie.

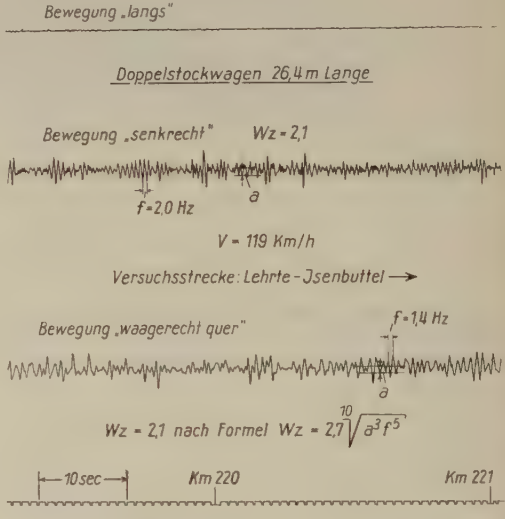


Fig. 9. — Graph of a test on the line with « Minden-Deutz 1950 » bogies.

Explanation of German terms:

Bewegung längs = longitudinal movement. — Bewegung « senkrecht » = vertical movement. — Bewegung « waagerecht quer » = transversal horizontal movement. — Versuchsstrecke = test section. — Nach Formel = after the formula.

reduction in oscillations will be clearly seen, especially transversal oscillations which are so disagreeable for the passenger. The bogie is known as the « Minden-Deutz 1950 » type; it was designed by Dr.-Ing. MIELICH in collaboration with the « Vereinigte Waggonfabriken » of Cologne-Deuz and will be the standard bogie for passenger stock in the future.

As the new coach can carry 92 passengers seated and in addition at least 100 standing in the ample space available — and loads of this order are to be expected at peak hours — the total load, including the tare of about 31 t will be 48 t. The lightened axles of the C 4üp 39 coach, calculated for an axle load of 10 t will therefore be insufficient, and it will be equipped with lightened axles of a new type, calculated for an axle load of 12.5 t with a section of 2 000 mm (6′ 6 3/4″) for the space between the centres of the journals which has been laid down by the International Railway Union in the standardization of wagon components. In the old German axles, this section is 1 956 mm (6′ 5 1/8″). The other characteristics of the new axle are the hollow axle shaft, with 70 mm (2 3/4″) diameter hole, and the Krupp type wheels with lightened rim. Exact calculations have proved that these wheels, the rim and tyre of which are rolled in one, are more economical than wheels with separate tyres. The Bundesbahn has therefore also adopted the monoblock wheel for its standard axles as well. The lightened axles of the new coaches are fitted with roller bearings of the standard cylindrical pattern used on the German Federal Railways for a 120 mm (4 23/32″) dia. journal, the type of roller bearing retained by the international standardization group. Figure 10 shows the new lightened axle and the wheels. Before it was put into service, very far-reaching tests were carried out on the bench by the Rolling Stock Test Department, which proved that the resistance to alternating bending stresses was sufficient.

The axle-boxes used on the « Minden-Deutz 1950 » bogie are of an absolutely new type. They have laterally welded spring seats in which the helical springs of the bogie frame rest; on the other hand, they also have an auxiliary guiding pin which fits into a space in the bogie frame where it has 3 mm (1/8″) play in every direction. These two devices can be clearly seen in figure 7. The axle including the boxes weighs 1 080 kg (2 380 lbs), i.e. 301 kg (663 lbs) less than the standard axle for a load of 20 t but 197 kg (434 lbs)

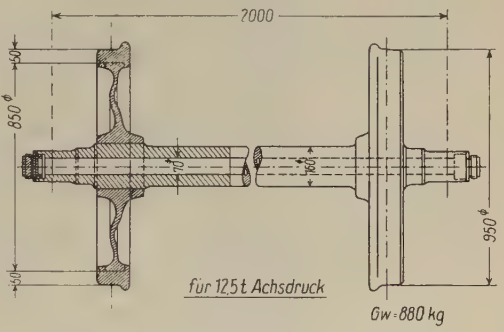


Fig. 10. — Lightened axle for a load of 12.5 t.
Achsdruck = load per axle. — Gw = weight.

more than the lightened axle for a load of 10 t used on the C 4üp 39 coach, and consequently 790 kg (1 741 lbs) more for the coach as a whole than when this axle is fitted.

As regards the bogies, another solution has been adopted for the railcars. The bogie designed by TASCHINGER for the triple railcar is characterised by the use of axles with inside boxes and the absence of any bolster, this being replaced by damping out the movements of the centre by rubber springs. This bogie has the great advantage of being even lighter, but owing to its special design cannot be used, at least at the present time, on the general run of passenger coaches, as these have to comply with the regulations governing international traffic. During running tests carried out to date, it has given results equally as good as the « Minden-Deutz » bogie, so that it will be interesting to follow up

future experience of the two types. The bogies of the Diesel railcars have a disc brake which adds considerably to the weight reduction; if it can prove itself in continuous service, it opens up interesting perspectives for the future evolution of the brakes of coaches on which shoe brakes are still always used.

made in this respect by increasing to a considerable and very annoying extent the noise in the coach. The German Federal Railways have set up a commission to study the causes of the noise and measures that will overcome it; railway experts are working in collaboration with eminent representatives of science and industry to

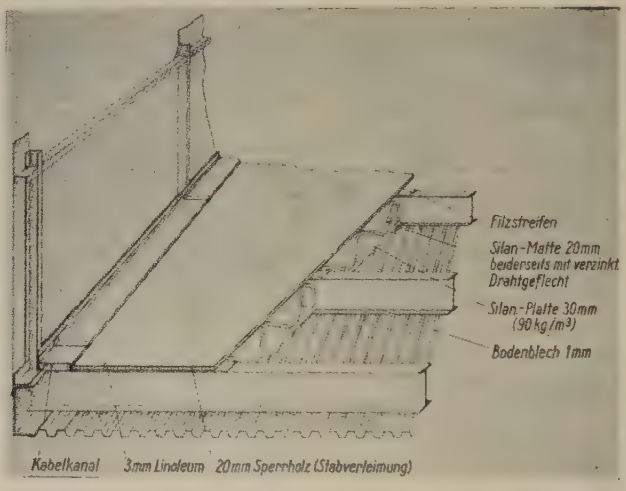


Fig. 11. — Floor of the coach.

Explanation of German terms:

Kabelkanal = cabling. — Sperrholz = plywood. — Filzstreifen = band of felt. — Silan-Matte = 20 mm (25/32") layer of silan with metal galvanised sheeting on each side. — Silan-Platte = Silan-plate. — Bodenblech = floor sheeting.

4. *Sound insulation.*

Together with running stability, sound insulation has a decisive influence on the agreeableness of the journey, and is all the more important in that on the one hand, present day coaches mostly fail to satisfy the legitimate desiderata of passengers in this respect, and on the other hand the development of undulatory wear of the rails ([9]) increasingly offsets any efforts

solve these problems. The Chairman of this Commission, TASCHINGER,, has already reported the results obtained to date ([10]) and also dealt with the measures to combat noise used on the new automotor trains of the Bundesbahn. It will be sufficient here to give a few brief indications on the methods applied in the new passenger

([9]) SCHWEHN : « Riffelbildung auf Schienen, ein aktuelles Oberbauproblem » (Undulatory wear of the rails, a present day problem). *Bundesbahn,* No. 10, 1951, p. 296.

([10]) TASCHINGER : « Der gegenwärtige Stand der Untersuchung des Geräuschproblems von fahrenden Eisenbahnwagen » (The present state of the study of noise problems on railway coaches whilst running). *Glasers Annalen,* Nos. 10 and 11, October and November 1951, pp. 242 and 269.

coaches. In these the floor has been sound insulated by fitting the corrugated sheeting not as is usual on the cross members of the frame, but below them, whilst the actual floor is made of plywood panels covered with stuck-down linoleum and fastened to the cross members with bands of felt laid in between. The empty space thus formed is filled with insulating material. Figure 11 shows details of this arrangement. The walls and roof are also insulated by means of glass wool or rock wool panels. Trials made with a different arrangement of these panels and other insulating materials are still in hand.

It was chiefly for sound insulation reasons that the old type of window sliding vertically has been replaced by a window divided into two horizontally, the upper part of which slides over the lower part (fig. 12). This not only does away with the openings through which the noise of the outside air penetrated with the old type owing to the necessary pipes for removing water collecting in the sliding frames, but makes it possible to use double windows and thus give the window itself insulating properties. Trials of these types of windows at the phonometric laboratory of the Munich Research Department has proved that they are superior to the old types from the point of view of damping out the noise ([10]).

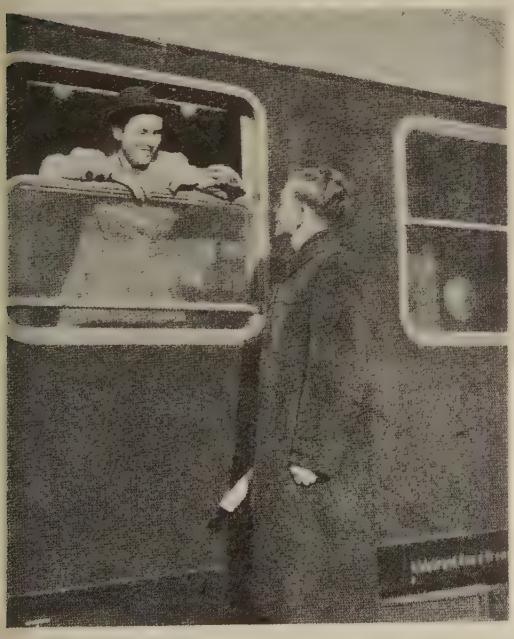


Fig. 12. — Window semi-openable.

From the point of view of manufacture and maintenance, the new window is undoubtedly better than the old types, as it does away with need for any sliding frame, which is a source of trouble owing to corrosion, and on the other hand its frame is easily fitted into the side walls of the vehicle. It is true that the weight is increased by the double window by about 300 kg (661 lbs). In the same way, the improved insulation of the body compared with the old types of coaches increases the weight by about 900 kg (1 984 lbs) per coach.

This increase in weight and the additional cost, which is the natural consequence, is only justified if followed by tangible success in deadening the noise. Comparative measurements between one of the prototypes and a 1936 type 3rd class express coach have confirmed this success. Whereas in the new coach the difference in the level of noise between the interior and exterior of the coach at 100 km (62 miles)/h on a section of line where there was no undulatory wear was 30 phones, and 35 phones at 115 (71 miles)/h on a section with undulatory wear for levels of noise of 70 and 80 phones respectively in the coach, the corresponding figures for the check coach were respectively 22, 25, 78 and 90 phones. Thanks to the steps taken the improvement in the difference between the levels of sound was 8 to 10 phones in the new coach, and it must not be forgotten that the latter consists of very large compartments, whereas the old coach only had small compartments which are better from the point of view of noise. In addition, the windows of the prototype did not fit tightly. When this

defect has been eliminated, the average noise level on lines with undulatory wear will be about 75 phones and on lines without it, 65 to 68 phones. With such values, the noise is no longer a nuisance when running and conversation is possible without raising the voice. The new window may seem strange to German passengers at first, as it is difficult for short persons to lean out. However figure 12 shows that it meets all legitimate requirements in this respect. It has already been used in the two double-decker rakes so it can be hoped that its introduction will not give rise to any difficulties.

5. *Intercommunication.*

Finally, another special characteristic of the body of the coach is the up-to-date intercommunication device which replaces the old type gangway. This consists, as figure 13 shows, of a frame with rubber diaphragms; these press against each other when the coaches are coupled up without any other fastening being required, and with the foot-plates spanning them make it possible to pass from one coach to the other through a completely covered in passage. This device simplifies connecting up the coaches, since the tiresome operation of coupling up the bellows is no longer necessary, and the widening of the opening in the end by about 400 mm (1′ 3 3/4″) considerably facilitates circulation through the train. The door itself is a folding door which remains permanently open whilst the coaches are coupled up. This new arrangement makes the vestibules of adjacent coaches virtually into one large compartment, which is a valuable feature at peak hours. In addition, owing to the increased outside dimensions, it reduces the space between the ends of coaches and consequently the formation of eddies, thereby saving tractive power (fig. 14) and

Fig. 14. — Ends of streamlined coach with rubber flange intercommunication.

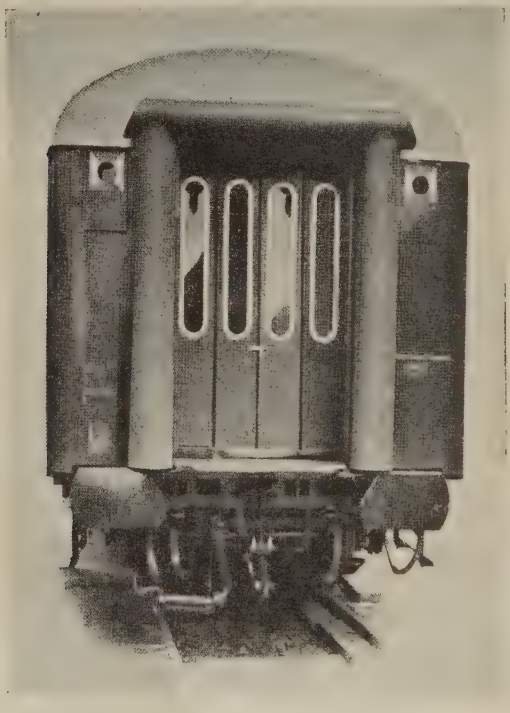


Fig. 13. — Modern intercommunication equipment with rubber flange.

finally, it is cheaper and more economical to maintain than the bellows. The prototype has already run more than 300 000 km (186 000 miles). The same intercommunication device has been successfully used on the double-decker rakes. There will therefore be no hesitation in using it on the new coaches, and consequently generalising its use in German internal traffic; moreover there is no reason why it should not be used in international traffic in the future.

6. *Lighting, heating and interior arrangement.*

The lighting and heating are the most important points in designing the interior of a coach. It would however be premature to give detailed characteristics, as their final form has not yet been decided. On the contrary, the three prototypes have been fitted with different types of heating and lighting which are still being tested. As regards the lighting, it can be stated in principle that the amount of light now available in our fast and express coaches no longer meets the requirements of passengers who have become more exacting. International convention stipulates a lighting of 50 lux, but this figure must be considerably exceeded to give sufficient light for long journeys. This can be done with the classic incandescent light just as well as with the fluorescent tubes recently used to a considerable extent on passenger coaches, particularly abroad, which have the advantage that there is no dazzle and the current is more efficiently used. Last year, when overhauling its express coaches, the Bundesbahn equipped 200 coaches with fluorescent lighting for the first time, and found the latter, after the initial difficulties had been surmounted, very useable. But it is precisely in this field that technical progress has advanced with gigantic strides so that trials have had to be carried out on other new forms of lighting.

In this connection, it may be stated that in the meantime the German Federal Railways have definitely given up gas lighting, which was still used on the old 4 and 6 wheeled stopping coaches. The reconstruction of the fixed installations which were destroyed during the war, would have necessitated such expenditure that it was more economical to equip them as rapidly as possible with electric lighting, especially as it was found possible to design a very simple lighting plant for these coaches which justified the change over even on such old stock. This small electric lighting plant makes use of a 450 W Bosch generator, a suitable battery and a simple regulator working on the Tirill principle, with which there is only a single switch for the whole coach. It has given good results and in any case gives a much better light than the old gas lighting. About 8 500 coaches have already been altered, and the work is being carried out systematically so that by 1953 gas lighting will have completely disappeared from the coaches of the Bundesbahn.

The prototype coaches are fitted either with low pressure heating equipment of an improved design, which does not differ in principle from the usual type used on most of our bogie coaches, or with an

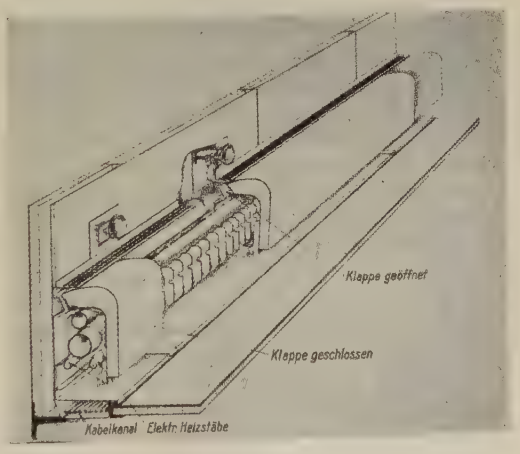


Fig. 15. — Mielich heating.

Explanation of German terms:

Elektr. Heizstäbe = heating resistances. — Klappe geschlossen = shutter closed · geöffnet = open.

Fig. 16. — Inside arrangement, 3rd class.

up-to-date high pressure heating system based on suggestions made by Dr.-Ing. MIELICH based on the idea of dividing the main conduit into two and passing it through the coach along the side walls which help to heat the coach, instead of placing it under the coach as is the usual practice. The heating tubes are separated inside the coach by heavily insulated shutters which stop any air circulating when they are closed and a regulatable amount of air when they are open. They can be operated by the passengers by means of a knob by which they are regulated by hand. Figure 15 shows the principles of this arrangement. It also makes it possible to keep all the electric heating to the side walls, thus leaving the floor of the coach unencumbered by any radiator, which is a great advantage from the point of view of cleaning the coach. The type, which will be adopted for the mass produced coaches, can only be settled when the trials now in hand are completed and can be interpreted; obviously the weight and the cost will have to be taken into account. In view of the progress made in electrification, the coaches will also be equipped with the 1 000 V electric heating normally used on the Bundesbahn.

The coaches must be so arranged that passengers will find them attractive, sober in appearance but in good taste, and in accord with present day requirements, especially as a result of the development of the automobile. At the same time, they must be as simple and rational as possible as far as manufacture and maintenance are concerned. The extent to which this has been achieved can be judged from figures 16 and 17. The first shows details of the upholstered 3rd class seats which

Fig. 17. — Inside arrangement, 2nd class.

are the result of numerous trials; together with the increased size of the compartments to which we have already referred; they are very much more comfortable than the old « hard » class with its slatted wooden seats. The backs have been made rather high, so that seated passengers will not be disturbed by draughts in any way if the windows are open, without however impeding the view of the whole compartment. The colour of the upholstery in mipolam or imitation leather has been harmonised very carefully with those of the walls covered with plastic materials and the silvered finish of the luggage-racks, so that the general impression of the compartment should please the most blasé passengers. The 2nd class compartments had to be arranged in a corresponding, but rather more luxurious fashion. As figure 17 shows, particularly large, upholstered seats have been provided; the cushions of the seats and backs are fitted on runners with rubber checks, so that the passengers can pull them out and set them in any position they wish. They can be pulled out so far that the opposite seats meet when passengers can lie down, an arrangement also adopted in the rebuilt old coaches used on fast and express services, and which is much appreciated by passengers. The upholstering of the seats, the design and colours of the materials used, together with the semi-polished elm veneering gives the 2nd class compartments a more comfortable and well-balanced appearance. An architect, Mme Lisl Bertsch acted as adviser to the Bundesbahn in designing the internal arrangement of the coach. The technical aspects of manufacture and maintenance have been borne in mind as regards the seats which have been mass produced with the luggage racks attached using steel or aluminium tubes, and fastened to the coach by means of a few screws only. It is therefore easy to strip the inside of the coach if any work is to be done. In the same way, the whole of the upholstery is mass produced and is easily interchangeable. Compared with old methods of manufacture, these methods have led to a reduction in manufacturing costs.

To close we may state that in order to make it possible to drive the train from the end of the rake with an engine pushing it from the rear, all the coaches have been fitted with the necessary control circuits, and some of them will be equipped with a separate driving compartment. The arrangement of the latter has not yet been finally decided, but it is being designed in such a way that when the coach is being used in a train the circulation of passengers will not be impeded thereby. The brake is designed for a speed of 120 km (74 miles)/h.

7. *Mass production.*

During the summer of 1951, 500 of the coaches described above were ordered as a first step, deserving of congratulation, in the renewal of the stock of out-of-date coaches and towards overcoming the shortage of rolling stock. The order was divided between 15 firms in Western Germany and Berlin; deliveries are to take place, half in 1952 and the remainder by the middle of 1953. These coaches being intended to make it possible to provide an improved urban and inter-town stopping train service, and not for long distance services essentially, will all have central doors; half of them will be composite coaches and half third class coaches.

C. *Double decker coaches.*

Amongst the other vehicles studied, we will merely say a few words about the double-decker coaches. The new principles of construction will also be used in this case. In the two rakes, the seats are arranged 2 + 2 in 3rd class, and 1 + 2 in the 2nd class; the coaches are 26.4 m (86′ 7 3/8″) long. The latter measurement has proved very suitable, as two compartments on each deck are gained thereby, and also because the increased length has considerably improved the exterior aspect

of these high vehicles (fig. 18). As these rakes have been in service for one year and six months respectively, and the first has already run more than 100 000 km (62 000 miles), it is already possible to give some information about the experience obtained with this special type of coach. The double-decker coach was originally designed as a normal coach to remedy the overcrowding then existing in the passenger trains, but in practice, owing to the complete upset which took place in the passenger traffic, it appeared that the ordinary large capacity coach, like those described above, was better for general purposes, whereas the use of double-deckers is particularly indicated in services requiring fast, light trains with a particularly large number of seats, especially to link up important places, where there is not much passenger traffic at the intermediate stations. In any case, it was an interesting experiment and up to a certain point full of promise, as in the case of single berth compartment sleeping cars, the cinema-coach, the panoramic coach and other special types of coaches. It achieved its natural place in the general line of evolution and was liked by the majority of passengers; it has also proved very useful to the Bundesbahn from the publicity point of view.

Fig. 18. — Double decker coach, 26.4 m (86′ 7 3/8″) long.

D. *Express train coaches (D-Zugwagen).*

To complete the evolution, there is the new express train coach, for which, as we also said at the beginning, the construction of the 4 prototypes is to some extent the preliminary work. But if these as a whole are inspired by the traditional form of express train coach, today more than ever it is necessary to take into account the future evolution of passenger traffic with such coaches. The express train coach is in competition with the long distance motor and tourist coaches. These are constantly improving their power and their design. Being designed to comply with the strict safety requirements of the railway, the express coach has naturally a long life, and for economic reasons, cannot be completely rebuilt during the

40 years of its life, in order to bring it up to date more than once. During the same period, the automobile will have been replaced 5 to 8 times by a new vehicle. It is impossible to foresee the progress that will take place during this period in its form, its design and its power. On the other hand, the express train services, taken alone, do not show a deficit like the passenger services as a whole, and the railway charges higher fares for the express trains. All these considerations explain why it is necessary — one may even say make essential — in designing such stock to go much further than at present as regards comfort, this being only limited by the total cost due to the purchase price and the maintenance costs.

If we are not to abandon the fundamental form generally adopted by all the countries of Europe, that of separate compartments with a side corridor, to adopt the American form, such progress cannot be obtained unless we do not exceed, even in 3rd class, a figure of 6 seats per compartment, which at the same time represents considerable progress compared with the corridor coaches used for the other passenger services. Such a decision in its turn will lead to the construction of a longer vehicle, in order to limit the reduction in capacity. To obtain standardization of the stock, which is desirable from the operating and maintenance points of view, the length of the new express coaches has therefore also been fixed at 26.4 m and the bogie wheelbase at 19 m (62′ 4″). The bodies of the three forms of coach, A B, B C and C will have vestibules of the same size and will only differ in appearance by the different arrangement of the central part, which will be the same length in every case. The widths of the compartments will therefore be 1 700 mm (5′ 6 7/8″) in 3rd class and 2 100 mm (6′ 10 11/16″) in 1st and 2nd class. The increased comfort of these two classes will be the result not only of the greater space available but also of better upholstery, also mass produced, the possibility of lying down, the fitting of individual lamps to make it possible to read, and better internal arrangement of the compartments. Finally beside each W. C., there will be a separate toilet compartment, which is of particular value in the case of night journeys, and is also recommended by the International Railway Union. The coaches are equipped with the S S brake of great power, which make it possible to run at 150 km (93 miles)/h; those vehicles destined to run in international traffic will be equipped with the new combined electric heating working on 1 000 V a. c. and 1 500 and 3 000 V d. c. The investigations were based on these general aims. They will profit by the experience obtained with the construction and trials of the new coaches and new railcars. It is hoped in this way to determine the most economical method of construction and achieve the optimum results with light weight metal construction for passenger coaches. The prototypes also required for this stock will be available towards the autumn of 1952.

III. Future evolution.

When all these different coaches have been perfected, the number of types of coaches required in the future will therefore be reduced to the minimum : i. e. two fundamental designs of body, the variants of which only differ by the arrangement of the interior, which will all rest on the same bogie. But the economic consequences will only be fully felt if we keep strictly to the types thus fixed over long periods and avoid all modifications. This is the only way to get the new stock required every year which would be an economic necessity in any case but with the present state of the stock is still more urgent, at a supportable cost; it is also the only way of obtaining a sufficient large stock of standardized vehicles to reduce maintenance costs to the minimum. If this period is fixed at 5 years, this will be sufficient to create the necessary preliminary conditions to obtain these advant-

ages, without losing touch with technical progress. During this time, investigations must be carried out methodically to keep in touch with improvements, so that suitable designs will be available at the proper time for mass production. These conditions are not in any way new and have already been expressed on many occasions. Unfortunately it has not been possible within recent years to put them in practice as would have been economically desirable.

The technical problems which will then arise cannot be indicated here. If it has been possible to obtain the results reported above by applying light weight construction in steel, it remains to verify to what extent the use of light materials will make further progress possible in the direction of obtaining an economic weight reduction of vehicles. The light metals have already been widely used in the construction of coaches and railcars. Doors, seat-frames, luggage-racks, window-frames, and small articles in light alloys are to be found on nearly all recent coaches. Entire coaches, railcars or trailers have already been built by the Reichsbahn. In the construction of the bodies of coaches, however, light metals have not so far succeeded in taking their part in Germany. The reason appears to lie in the difference in price between steel and aluminium, which, for equal weight, is about 1 : 10, and owing to the limited amount of capital available in this difficult economic period, this makes the increase in the purchase price involved out of the question. It should also be added that the use of light metals also involves completely new methods in the elaboration of designs as well as in manufacture and a thorough study of all the details if full use is to be made of their properties whilst respecting the safety conditions essential for passenger coaches. It would therefore require much research work, followed by the construction of a sufficient number of prototypes to solve the problems bound up with the use of light metals. The problem must however be dealt with as soon as the necessary financial means are available because this is the only way in which to solve the important problem of lightened construction.

As we have already said, methodical research into the fields of heating, ventilation and lighting also make it possible to hope for new progress which will increase the comfort of journeys. There will likewise be an interesting evolution as regards the brake. At the same time the use of rubber must be carefully studied for its elastic and sound-deadening properties, although the use of pneumatic tyres on rail vehicles would appear to be limited to special cases owing to the extremely high cost of the vehicles using them. Pneumatic types will only stand a load of 1.2 t and consequently in the case of express coaches involve the use of 10 wheeled bogies as well as extremely light weight construction. To end we will mention the efforts made to improve the inscription through curves of vehicles by the use of driven axles, which makes it possible to increase the over-all average speed by increasing the speed at which curves are taken. In this connection, the Spanish Talgo train has incorporated a lot of new ideas; the whole of the problems which it raises have already been dealt with in No. 2, February 1952, of the « Eisenbahntechnische Rundschau ».

But all these important and interesting technical problems are completely out of the picture beside the urgent necessity of putting a stop to the constant reduction in the stock by means of sufficient and continuous new constructions, to bring the stock back to normal figures. It will only be then that the Bundesbahn will be in a position to fulfil the duties falling upon it as regards the transport of passengers.

[625 .215]

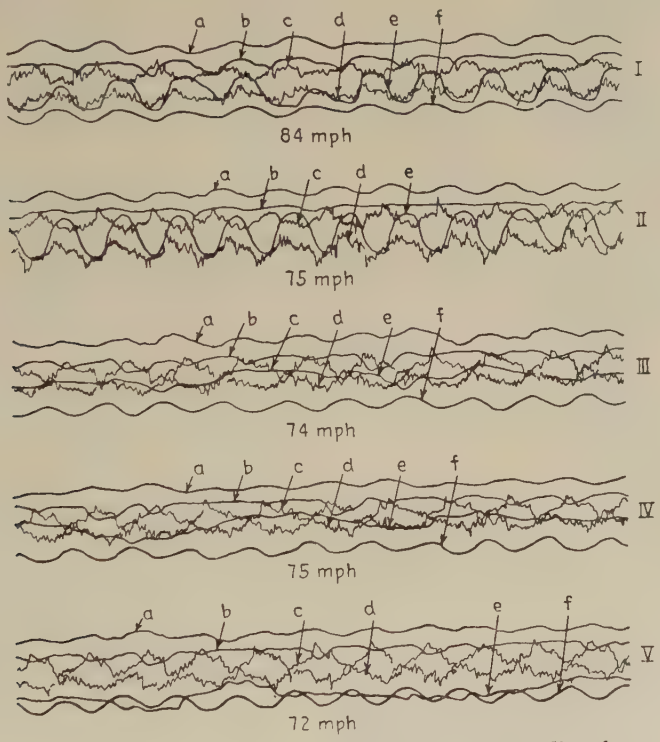
« Shimmy » in passenger-car trucks.

Phenomenon investigated in tests with a laboratory car—Source, wheel-tread wear; the cure, restraint of truck angular motion.(*)

(From the Railway Age, February 12, 1951.)

A series of tests were conducted on the Pere Marquette district of the Chesapeake & Ohio to determine the causes and cures of « shimmy » in the riding of passenger cars. The data secured are conclusive that this type of truck motion can be controlled and even prevented by the introduction of suitable angular damping between the truck frame and the car body.

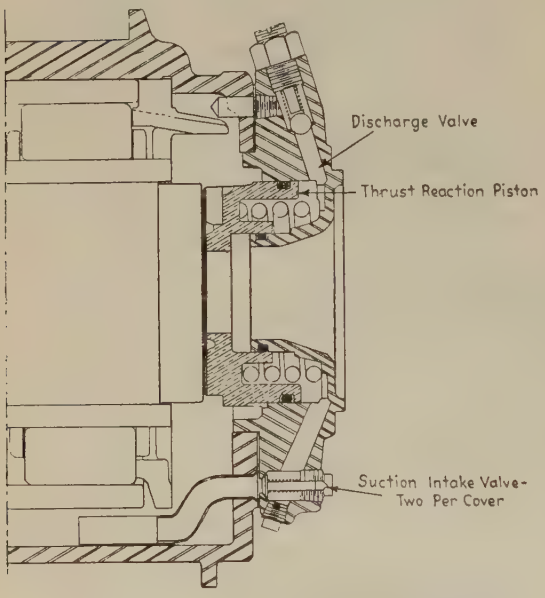
The problem is illustrated by the ride-



Ride-recorder chart shows the effect of hydraulic thrust covers of the journal boxes on the action of a truck in shimmy.

(*) In a paper presented at the semiannual meeting of the American Society of Mechanical Engineers held at St. Louis, Mo., June 19-23, 1950, S. G. GUINS, project engineer, Office of Research Consultant, Chesapeake and Ohio, described a series of tests investigating the causes of « shimmy » in the riding of passenger cars and presented conclusions derived from them. This article is taken from Mr. GUINS' paper. — *Editor.*

recorder chart shown in one of the illustrations, in which are shown the lateral displacement of the axle with respect to the journal box and of the box with respect to the truck frame, the angular displacement of the truck about its center pin, the lateral accelerations of the two ends of the truck and the combined effect on the lateral acceleration of the car body. The test records show a frequency of these oscillations from 2.8 to 3.7 cycles per sec. and



Schematic drawing of the hydraulic thrust cover applied during tests to control lateral movement of the truck.

that this is independent of speed. Furthermore, these conditions usually do not appear until the wheels are worn (25 000 miles when new wheels have A. A. R. taper treads and 35 000 miles for new wheels with semicylindrical treads) and until the train speed is over 63 m.p.h.

As the problem was new, it was decided to make as thorough a study as possible. The Budd research car was engaged and instrumentation provided to take 24 separate measurements. An attempt was made to control most of the operating variables so as not to make changes in more than one variable at a time.

A special train was used for the test. It consisted of a Diesel-electric locomotive, a coach, the test car, and a parlor car. This order was kept the same as much as possible throughout the tests. The direction of motion was kept constant by turning the train on Y's at both ends of the test section. All tests were made on the same section of track. No maintenance was done on this section during the tests. Only the test crew occupied the test car during the tests, thus keeping the weight constant. All tests were conducted, on clear days. Water could be sprayed on the track ahead of the test truck to give a quick comparison between rides on wet and dry rail. A test set of worn wheels was selected to produce the motion under investigation. Several other wheel sets were tried to compare the action produced by wheels after different mileages. Two sets of springs with different lateral constants were used during the tests. The center of gravity of the test car could be changed from 50 in. to 52 in. above the rail. Several shock absorbers were tried to determine their effect on the type of vibration under investigation.

Effect of variables on ride.

Attempt was made to determine the effect of the following factors on shimmy : the lateral rate of the car suspension, vertical location of the center of gravity, lateral damping, wheel wear, and effect on the car ride of water and sand on the track. The following conclusions are based on the records and on the observations of the test crew :

Direction of motion does not seem to affect the riding quality of the car except when connected with a change of location in the consist, and then the latter is the controlling factor.

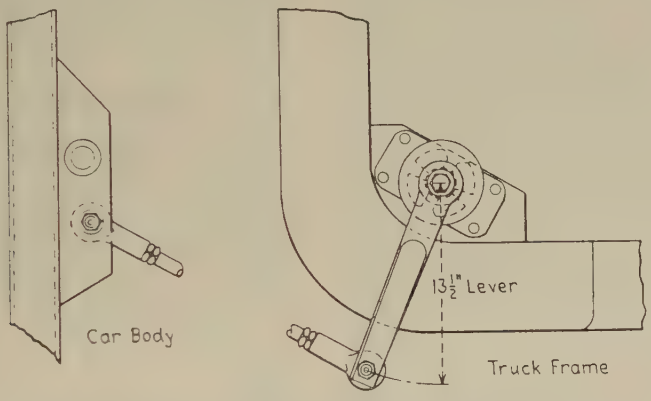
Increasing the height of the center of

gravity by 2 in. produced the hardest ride with the most violent oscillations. The cause is not clear.

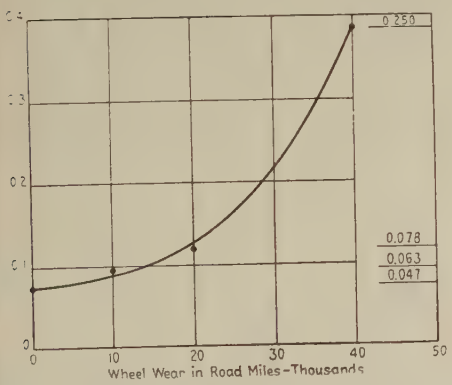
Vertical shock absorbers improve the ride of the all-coil-spring truck. This was demonstrated by tests during which they were removed. Not only was the vertical ride affected, but the lateral ride was worse too. Lateral shock absorbers as they are conventionally applied have no effect on the quality of the ride.

Wheel wear has a very definite effect on the lateral oscillations of the car. Both the tests and observation indicated that the truck will not oscillate until the wheels are working to a definite pattern in a truck set. Breaking up this combination either by replacement of one axle by another with newly ground wheels or by one from another car will stop the truck from oscillating. This practice, established on the Pere Marquette district streamliners, doubled the mileage between wheel turnings.

Lateral clearance of the journal boxes was investigated in relation to lateral oscillation of the truck. Reductions from the



Application of shock absorbers for the control of angular truck movement. Two mounted at diagonally opposite corners of the truck were connected to the car body.



Effect of wheel wear on the behaviour of the truckframe. Frequency of oscillations remained constant at 3.5 cycles per second.

standard clearance gave a better ride for a short time, after which the oscillations became violent again.

Tests were also made with a truck utilizing a Pennsylvania Railroad suspension system. This consists of a combination of elliptical and coil springs without auxiliary shock absorbers and with the spring plank and bolster connected by a lateral tie rod. This restricts the lateral motion of the bolster springs and places it all in the swing hangers. It proved successful in breaking up lateral oscillations and permitted a wheel life of over 100 000 miles between refacings. It made the vertical ride slightly rougher, however, transmitting more high-frequency impacts.

Truck motion during shimmy.

Lateral oscillations of the car body can be produced by the yawing or nosing of the truck, thus producing lateral translations of the bolster and, consequently, of the car body. They can also be produced by pure lateral oscillation of the truck between the rails. Any combination of these two motions can cause the same body motion.

The study of the records of the accelerations of the two end transoms indicates a phase difference of about 85 deg. when unrestrained. This shows that the lateral movement of the truck is caused by yawing and pure lateral sliding. If the truck was yawing only, the movement of the end transoms would be 180 deg. out of phase. If the movement was pure sliding, the two acceleration curves would coincide.

The outstanding characteristics of shimmy shown by the records are (1) that its frequency and amplitude were generally independent of any physical components of the truck suspension; (2) that the forces causing the motion originated at the point of contact of the wheel and rail; and (3) that the resultant motion is a combination of angular and pure lateral oscillations.

Three possible cures were proposed, one to control lateral motion and two to control the angular motion.

Hydraulic thrust covers.

The first measure tried was a hydraulic thrust cover for the journal box. This was designed by the railroad and built by the Hyatt Roller Bearing Division of General Motors Corporation. It consists of a piston in the box cover operated by the axle which permits a total lateral movement of 1 in. damped by pumping oil through an orifice. This device was applied in an attempt to absorb the energy that produced shimmy as close to its point of origin as possible. Obviously, it could control only the lateral component of the motion.

When the covers were first tested in the truck there was no change in the action of the truck parts regardless of the setting of the adjustment screw. With the passages enlarged as much as the castings permitted, the tests were run over with the results shown in one of the illustrations (1). While the results were not as expected, the « hunting » of the axle was eliminated — see trace (e) in the ride-recorder graph — for adjusting-screw openings of one and one-quarter and one and one-half turns, and the phase difference between the end transom accelerations — traces (c) and (d) — became nearly 180 deg., indicating that the covers removed purely lateral translation from the truck frame. The lateral accelerations of the car body — trace (a) — were reduced slightly.

Angular control devices.

Two devices were tried to control angular motion of the truck. One was the Symington-Gould spring-loaded side bearing, the truck set of which carried 4 000 lb. of car weight. These were tried as supplied and also modified by attaching molded-type brake lining on their top surfaces. Application of this device introduced additional torsional damping in the truck.

The second device consisted of two Houde shock absorbers, Model FBBRC, mounted on the end transoms at diagonally opposite corners of the truck frames and connected to opposite side sills. A sketch of this installation is shown. A very hard setting of the shock absorber was required to stop the shimmy in the truck that had already developed a violent shimmy condition (2). For a maximum truck angular

(1) Calibrated at a rate of 76 cycles per minute and 1/2 in. travel, the pressure in p.s.i. was 70 with the adjustment screw open one-half turn, slightly under 35 with one and one-quarter turns, about 28 with one and one-half turns, and 20 with two turns.

(2) The best results in reduction of lateral accelerations of truck transoms and the car body were obtained with a « hard » setting of the Houde shock absorbers and settings of the hydraulic journal-box covers of 1 1/4 or 1 1/2 turns open.

displacement of .855 deg. at 3.5 cycles per second and a leverage ratio to the shock absorber of 6.62, the maximum angular velocity of the shock-absorber shaft is 126.2 deg. per sec, giving a maximum restricting torque of 32 500 in. lb. The damping coefficient for the installation is 36 000 in. lb. per deg. per sec.

A study of the records obtained in the second series of tests, where wheels of various mileages were tested, produced evidence that all the wheels had a tendency to shimmy at 3.5 cycles per second, but that the amplitude varied in accordance with age, increasing with wear. In the graph of wheel wear in road miles the points for which the displacement in inches is shown are plotted from the test charts and indicate the general trend of the build-up of negative damping force with wear.

This observation led to the conclusions that even a small amount of angular damping, when applied to new wheels, might prevent the wheels wearing to a pattern which leads to shimmy. The new wheel that indicated an amplitude of about one-tenth of the maximum measured would, therefore, require only one-tenth the angular damping.

This is pretty well substantiated by the results obtained on the two trucks that are being service tested on the Pere Marquette streamliners. On these are Houde shock absorbers set to produce about 750 in. lb. per deg. per sec. damping coefficient, and spring-loaded side bearings which were modified by adding brake lining to the top surfaces and produce about 500 in. lb. per deg. per sec. damping coefficient.

The indications, therefore, are that very soft angular control, if applied to a truck with new wheels, will prevent any tendency for the truck to shimmy. This can be done without any danger of unsafe operation on curves and crossovers from excessive angular restraint. The fear of this possible danger has prevented earlier application of angular damping devices.

[625 .172 (485)]

How track is raised and reballasted in Sweden,

by Tord Fogelberg,

Division Engineer, Swedish State Railways, Nassjo, Sweden.

(From Railway Engineering and Maintenance, July 1951.)

To make it possible to increase the speed of trains and at the same time reduce maintenance costs, the Swedish State Railways are presently providing better track drainage by employing a novel and economical method of replacing gravel ballast with crushed stone. This new system is made possible by the recent development of two devices—one to plow out the gravel ballast and the other to raise the track on crushed-stone.

When tracks have been reballasted in the past, the practice was to remove the gravel ballast from the cribs by hand and to replace it with crushed stone. The track was then lifted about 10 in., leaving the stone ballast to a depth of 18 in. below the bottom of the rails. The cribbing work was done with spades, shovels and picks. After the track had been cribbed, it was raised on jacks and tamped with spades and « spits ». This type of work is exhausting to the men and requires a large number of them to accomplish very much. In fact, the magnitude of the force required to do the reballasting in this manner meant that many of them had to be taken from other essential work or the force increased temporarily for the duration of the program. This is often quite difficult.

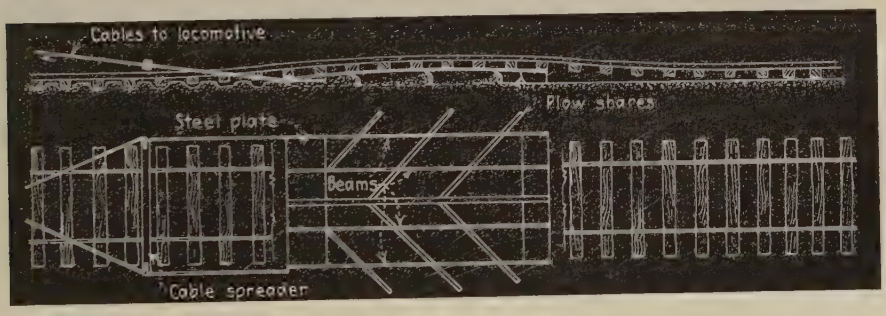
To improve this operation and reduce the manpower required, the writer undertook to develop a new labor-saving method of doing it. The final details were completed with the cooperation of Mr. Einar Stern, owner of the firm of Lindstroms Eftr., Malmo, and the resultant device were patented. In the method developed a locomotive, the railroad's strongest worker, does the heaviest work. The use of a locomotive is feasible because one is usually available for some time on the site in connection with ballast distribution.

Removing the old ballast.

As the first step in the new method, a newly-designed dig-out plow is placed under the ties to remove the old ballast. This device consists of four iron beams placed longitudinally to the track. At the forward end they are attached to a solid plate, 11 ft. wide. In the rear they are fastened to an iron box of the same width formed like a sleigh runner to smooth and compress the bottom. To these beams V-shaped plows are fixed to distribute the old material on the roadbed shoulders. To the front part of this device towing cables are attached for coupling it to a locomotive at such a distance that the latter does not interfere with the raising of the track. As the locomotive tows the dig-out plow forward, the track is progressively raised by the apparatus and the plow forced into the ballast by the weight of the track and the machine itself. Pulled along in this manner, the V-shaped plow shares force the ballast to each side of the track, leaving a smooth bed on which the ties can come to rest behind the device.

After the dig-out plow has completed its work and has been placed to the side of the track, crushed stone is distributed and then leveled to the height desired by a conventional track flanger, the plows of which have been lengthened to reach as far as the ends of the ties. To make it possible to push stones from the sides toward the center of the track, when that

As the first step in the new reballasting method developed in Sweden, a novel dig-out plow is pulled along beneath the ties. The plow shares force the old ballast to each side of the track, leaving a smooth bed on which the ties can come to rest behind the plow.

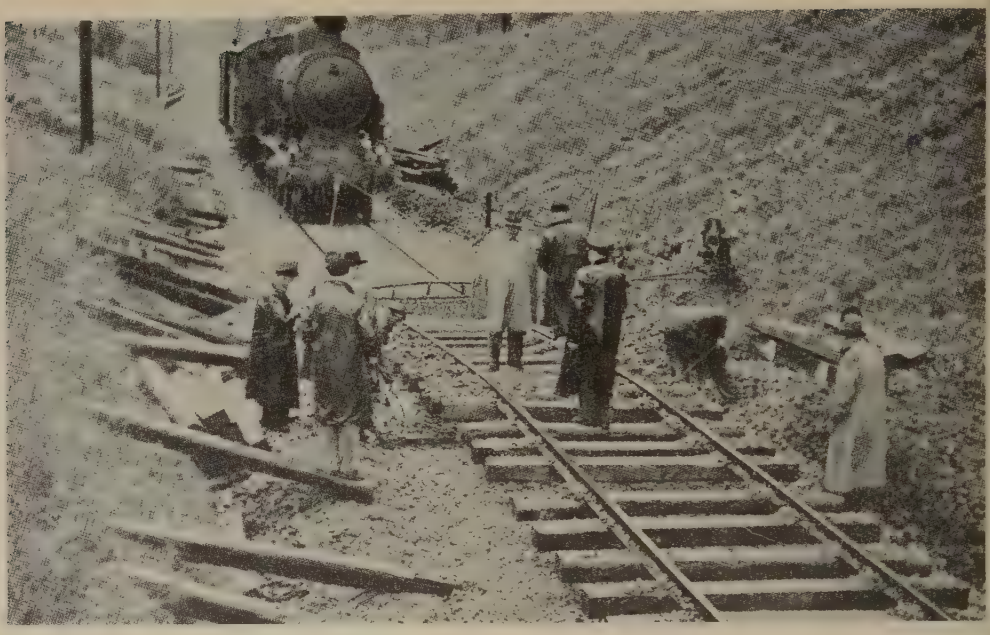


Construction details of the dig-out plow, which is pulled by the locomotive approximately at a walking speed.

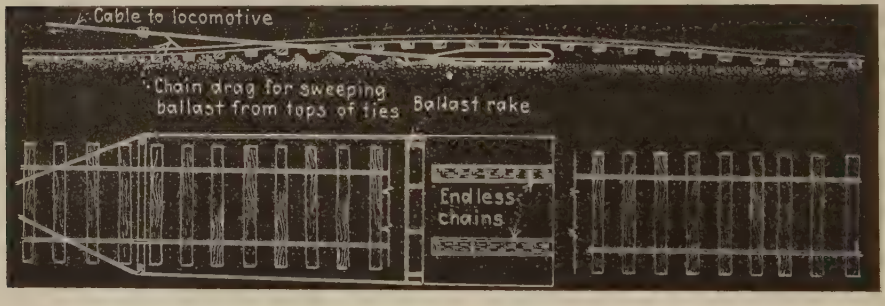
may be necessary, other special plows have been arranged on the flanger.

Raising the track.

To raise the track on the new stones another device is used. This consists of an 11-ft. by 16-ft. iron sheet with its fore part bent up like a sleigh. Two endless chains or tracks, running on rollers, are attached to the top of the sheet for supporting the track and facilitating movement when the device is placed under the ties in the same



After the stone has been distributed and leveled, the track raiser is dragged under the ties. This device acts as a wedge that raises the track while the ties ride on endless chains and a movable rake drags stone ballast into the troughs formed by old tie beds.



Construction details of the new track-raising device. With it up to 1.6 mi. of track can be lifted in two hours.

way as the dig-out plow. A movable rake is mounted on the nose of the track raiser to drag stones into the troughs formed by the old tie beds.

A locomotive also drags this piece of equipment which works as a wedge that raises the track up with the ties riding on the endless chains. As the device is pulled along, the sleigh-formed sheet successively climbs up on and compresses the stones under the weight of the track which gradually sinks down behind the « raiser » onto

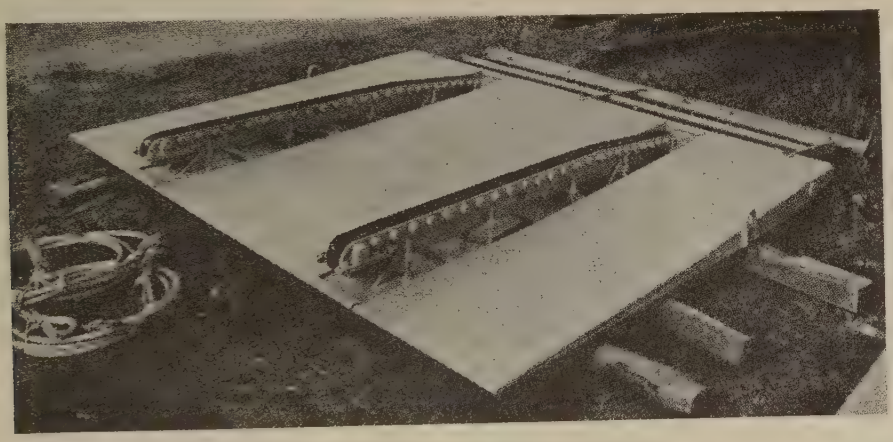
the bed of new stones. The track now lies lifted on the new stones, having been raised to a height directly proportional to the amount of stone distributed. This amount should be such that the raise leaves the rail about 2 in. below final elevation. This operation will usually leave the track out of alinement, but this condition can be easily corrected immediately behind the track raiser.

When this has been done, stone is again distributed in the track and smoothed with the track flanger, leaving enough for the remaining 2-in. raise and for filling the cribs to the standard ballast section. We leave the track in this condition (if in good surface) for about two months so it can settle under traffic. After that period of time has elapsed, the final raise is made and the track tamped with power tampers.

The track raiser can also be used in an analogous way for raising track in gravel ballast. In fact, we have used it for this purpose on a double track-line, where it is impossible to use the V-shaped, dig-out plow. In this case, instead of wasting the crib ballast, the track is lifted with the track raiser about 3 1/2 in. or enough to place all gravel under the ties. New ballast is then distributed and the operation repeated as before explained.

Method is economical.

The work force required to reballast track with these two devices is only 8 men. Because the force is small and the work progresses rapidly, the cost of reballasting a section of 3.5 miles, including the dumping of the stones, amounts to only 55 to 60 per cent of the cost of the old method. The speed of the operation is fixed by the rate at which the new stones can be distributed. On our railroad five work-train loads of ballast, each containing 500 tons, are distributed in a week. Since 0.8 miles to 1.6 miles of track can be lifted by the track raiser in one or two hours, it has generally been used only once a week. During the rest of the time the gang is engaged in tie-tamping work.



Another view of the track raiser, showing the endless chains on which the ties ride.

[625 .236]

Reflections on the cleaning of the outside of railway coaches.

The cleaning of the paintwork on the outside of railway coaches is a very complex and delicate problem of multiple aspects.

Various factors have to be taken into consideration : the substance in question (paintwork), the dirt and the method of cleaning. The latter includes mechanical and chemical aids as well as the convenience and safety of the employees using them, the economy of the process being the preponderant factor.

The first two factors are in practice unknown to the manufacturers of the maintenance products who must simply consider that the « nec plus ultra » is used in the matter of paint, and yet this *substance* always remains very vulnerable : the shade and above all the gloss depend upon very delicate elements. However, their conservation will certainly encourage the passenger to prefer the train to the motor-car or airplane which rivals it in luxury (brilliance and colour) in order to make up for their inferiority as regards safety and comfort.

Dirt is the enemy to be vanquished. The depredations due to it accumulate with the time, the daily mileage and the nature of the track and the countryside and industrial regions run through. It is not much affected by the seasons or climatic conditions but is relatively sensitive to the kind of traction used. It becomes firmly engrained in the walls and leaves a ferro-bituminous deposit there, which is very adhesive, very mineralized, very little reactive, and consequently very inert and very difficult to dissolve. The ferrous particles swell up (60 times) owing to oxydation and as a result are firmly anchored in the paint.

A layer of paint very vulnerable chemically and mechanically in which is firmly embedded a very obstinate deposit : two elements which must be dissociated without damage and economically, this in sum is the problem with which the scientific investigator is faced.

Of the two aids available to remedy it, the mechanical and the chemical, the latter will prove of the greatest value.

Mechanical aids in fact will be found to be too rough or else ineffective. Abrasion destroys the film and does not respect the gloss, whilst polishing through the heat set up by friction desolves the deposit of dirt, but its viscosity is such that the polisher merely displaces but does not remove it.

The mechanical aid should be reduced to its simplest expression (bucket and cloth). Such spectacular installations as wash tunnels, costing a fabulous amount and giving very uncertain results, quite apart from the masses of water involved which penetrates everywhere and should be proscribed, involve the use of an abundance of cleaning materials, such as longhandled nylon brushes which cost a great deal and have a very short life. This system also has the great disadvantage of only reaching the extreme gauge of the coaches, so that rivets, mouldings, hinges and other protuberances, are cleaned without getting near recesses in the construction or curved-in parts of the sheets. Another major drawback is undoubtedly the taking of the rolling stock out of service for short periods in order to send it to the wash tunnels. The latter owing to their high cost cannot be built everywhere in order to obviate this drawback.

If mechanical aids must therefore remain

subsidiary to chemical aids, the latter must make full use of *chemical and physico-chemical* possibilities in order to solve this difficult and delicate problem itself. It will have to call upon a very complex set of wetting agents, solvants, reactors, lubricating polishers, pepsins, waxes, gelatinoids and swellers to overcome the tenacity of the layer of dirt on a very vulnerable surface. It is therefore a question of discovering *some convenient and economic composition* (easy to apply and consequently of low viscosity) which will make it possible to do without any fixed installations and merely involve the use of a small amount of easily moved equipment. The chemical efficiency of the product will enable labour to be reduced to the minimum. As such efficiency will depend on a sufficient length of contact and mass of the product, the necessary attention must be paid to these factors. The system as a whole must be very flexible and usable under all climatic and atmospheric conditions; it must be possible to use or stop using it at any moment, without the need for specially trained staff. Those using it must not be harmed either by touching it nor by the odours and vapours emitted by it. The product must not therefore contain any harmful nor corrosive ingredients. The latter, even if harmless to those using it and to the paintwork, would attack other metal parts of the rolling stock, as it would be sure to come into contact with them and lead to their premature wear.

In view of the size of the stock to be cleaned, such cleaning should only have to take place at widespread intervals, only a very small amount of the product should be required, and its purchase price should be as low as possible. This means that the ingredients must be carefully selected and accurately measured out so that there is no excess of any one ingredient, nor any ingredient that is not strictly justified. The keeping qualities of the product must be beyond reproach as regards its homogenity, its inflammability and its efficiency. In view of the absence of corrosive elements, the usual types of metal containers should be suitable for keeping it in.

All the above considerations show that a very carefully studied and very specialised product is required.

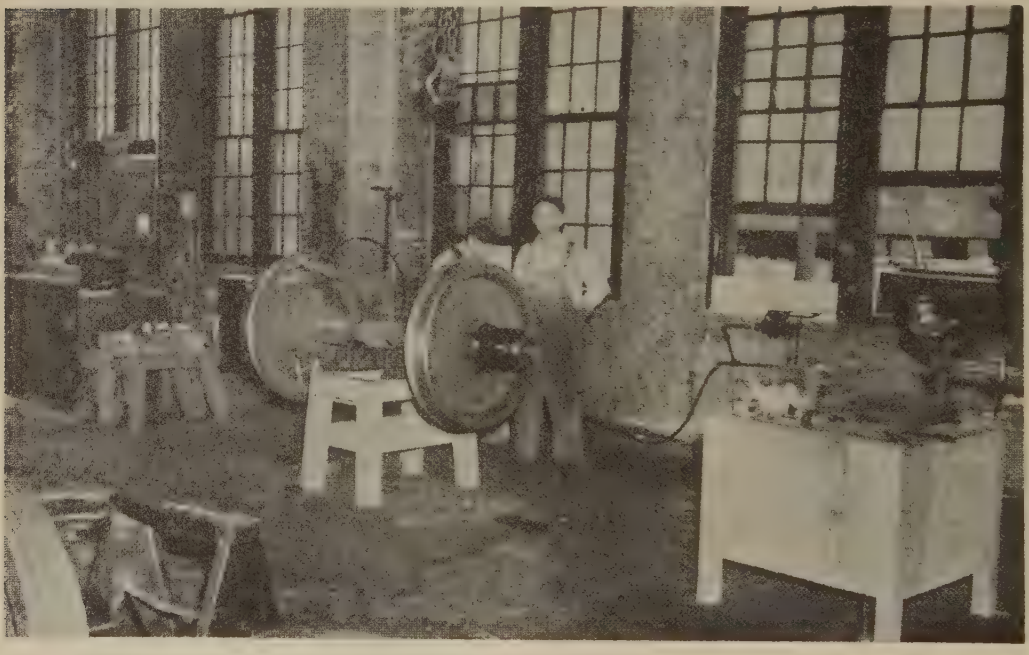
[625 .212 (73)]

Car wheels dynamically balanced at Burnside shops.

(Railway Mechanical and Electrical Engineer, January, 1951).

The Illinois Central has recently installed equipment for the dynamic balancing of car wheels on a production basis at its Burnside (Chicago) shops. The production-line set-up, was developed by J. F. Monger, general shop superintendent and J. J. MacLeay, general car shop foreman at Burnside, in cooperation with the Bear Manufacturing Company.

Experience with the dynamic balancing of car wheels at Burnside shops indicates that the average unbalance is between 2 1/2 to 3 lb. per wheel, with a maximum of 5 lb. By means of the I. C. production line methods, wheels are completely balanced statically, as well as dynamically in an average of 20 min. per pair of wheels. About 6 to 8 min. are taken for the actual balancing operation, while the rest of the time is required to make corrections; this is done by applying the specified amount of babbitt metal permanently under the inside rim of each wheel at the indicated spot by tinning and soldering.



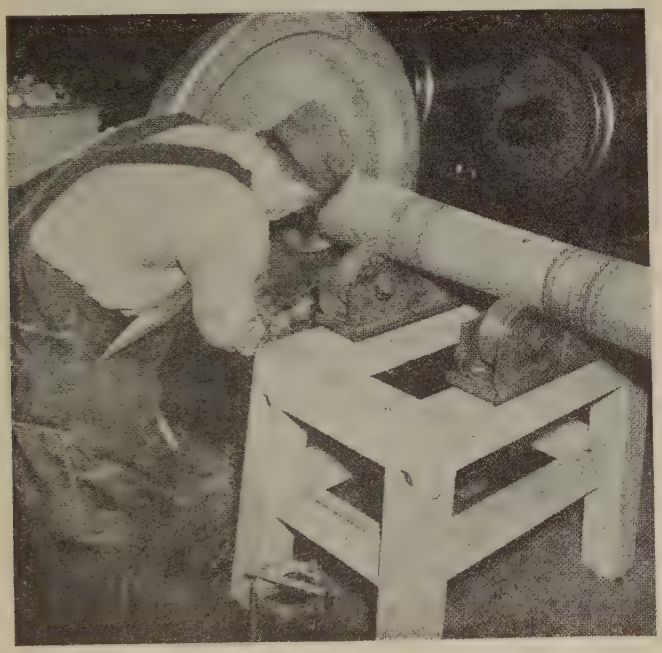
Roller-equipped wheel stand (left). — Small steel bench for babbit weighing and melting (right).

Dynamic balancing not new.

The I. C.'s original interest in dynamic balancing first took place several years ago, with the installation of a Bear dynamic balancing machine at the Burnside Diesel shop. Dynamic balancing soon became a regular part of the maintenance routine. In the course of balancing such large rotating parts as main generator and traction armatures, maintenance records pointed out the time, labor and money-saving effects of dynamic balancing. As soon as the point was reached where armatures, other generator parts and air conditioning equipment were dynamically balanced regularly as a matter of routine, maintenance costs were reduced. A reduction in bearing wear was noticed, with consequent elimination of frequent « tear-down » jobs to replace worn bearings. The life and efficiency of commutators and brushes were also increased, due to the elimination of vibration by dynamic balancing of the armatures.

Experimental wheel balancing.

In the light of these results with armature-balancing, I. C. maintenance officers decided to do some experimental balancing of car wheels whenever there was a lull in armature-balancing activity. Changing over the set-up to accommodate a set of car wheels was a simple matter. Special flexing heads, equipped with adjustable roller bearings, made it possible to accommodate shafts of varying diameters. The distance between column supports, on the Bear machine, was adjusted to accommodate the greater length of the axle.

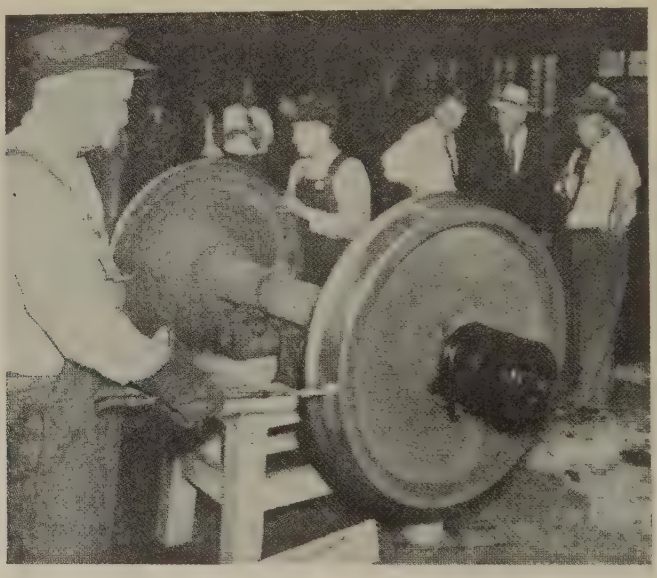


Tinning the wheel for application of babbit metal to correct the unbalance.

After many successful test runs and much research, the I. C. balanced all the wheels of its « Daylight Special », which runs on a

mile-a-minute schedule between Chicago and St. Louis. Other balancing operations involved the wheels of several cars of the « City of New Orleans », as well as a number of specialty cars, such as observation-parlor cars, bar and lounge cars, diners, dormitory-tavern cars, mail and express cars, and power cars.

During the testing period, I. C. officials also found that, when Diesel locomotive wheels are dynamically balanced, higher-speed standards can be attained easier, and the trains perform better. Other benefits included savings in wear and tear on bearings and coaches in general, as well as on track.



The wheel rim is preheated lightly and uniformly throughout the entire circumference.

Special wheel-balancing set-up.

The results of experimental dynamic-balancing operations were so favorable, that the Illinois Central installed special wheel-balancing set-up in the Burnside car wheel shop. The operation is divided into three distinct phases, each being performed at a different station. The balancing machine, babbitt heater and scale bench and wheel-supporting stand, equipped with rollers, are located in one line along the shop wall with the wheel storage track just in front. The first operation is to lift the pair of wheels to be balanced with the shop crane and place it in the Bear machine where it is supported on flexible heads with adapters to suit axles of different diameters and also roller bearing races which do not have to be dismounted.

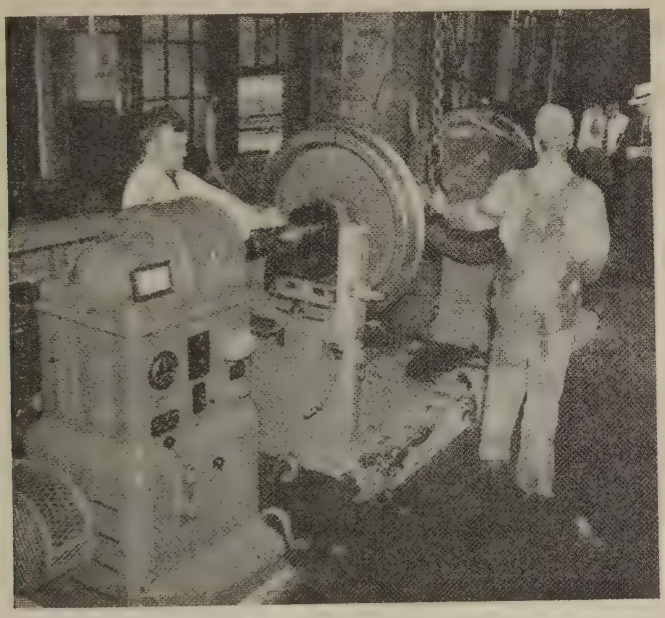
A safety hold-down is them clamped over the assembly which is revolved at the required speed, namely 325 r.p.m. for railroad wheels. An 1 800 r.p.m. motor and a four-speed transmission drives the machine which has a maximum speed of 1 000 r.p.m. A speed chart attached to the left top of the control tower specifies desired speeds for all railroad equipment parts likely to be balanced on this machine. A dial indi-

cator on each support column indicates the amount of unbalance, and a round spark dial shows the position of unbalance.

The amount and location of unbalance in each wheel is obtained at one setting of the pair of wheels in the machine, after which this pair is released and moved by the shop crane to the wheel stand, shown, where they rest on rollers and may be readily revolved.

cumference. A piece of sheet asbestos backed up with thin sheet steel is then clamped to the inside vertical surface of the wheel rim.

In the meantime, an amount of babbitt metal equal to the unbalanced weight has been weighed out on the Fairbanks scale, melted by gas heating of a small ladle and poured into the prepared mold. When cooled this babbitt adheres firmly to the



Wheels in position on Bear balancer. — Operator has started to lock axle to the flexing head.

The first operation is to grind off all dirt and scale at a point under the wheel rim, as shown in one of the illustrations, where weight is to be added. This is done with a pneumatic hand grinder. The wheel is then revolved by hand while a gas torch is used to heat the wheel rim lightly all the way around. The spot where weight is to be applied is then carefully tinned, and revolved to the lowest point on the circumference. A piece of sheet asbestos backed up with thin sheet steel is then clamped to the inside vertical surface of the wheel rim.

In the meantime, an amount of babbitt metal equal to the unbalanced weight has been weighed out on the Fairbanks scale, melted by gas heating of a small ladle and poured into the prepared mold. When cooled this babbitt adheres firmly to the plate and underside of the wheel rim and, for all practical purposes, becomes a permanent part of the wheel.

The amount of dynamic unbalance in the wheel, illustrated, was 3 lb. 2 oz. and this amount of babbitt is shown applied to the underside of the wheel rim at the required spot to place this wheel in accurate dynamic balance.

[625 .143 .3 (73)]

Supersonic testing of rail ends...

Indicates potential service failures. — Points out many lesser defects. Shows growth of web cracks,

by C. J. Code,

Engineer of Tests, M. W., Pennsylvania, Philadelphia.

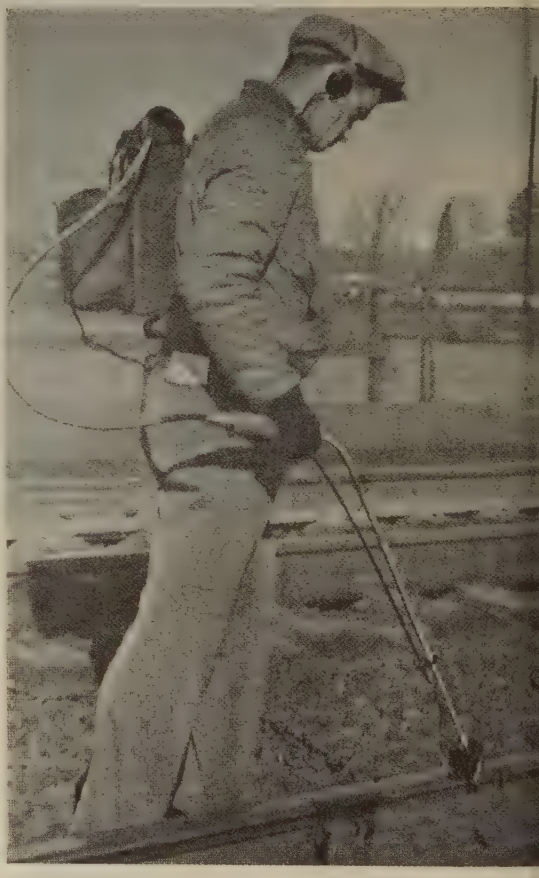
(From the Railway Engineering and Maintenance, June 1952.)

Supersonic inspection of rail ends for defects is only a little more than two years old, but in that time it has made an important contribution to the safety of railroad track, in spite of the fact that service failures within the joint-bar areas seldom result in derailments. At the present time, all of this type of rail testing is being done by either of two testing devices, both of which were offered to the railroads at about the same time. One of these is the Audigage flaw detector, manufactured by the Branson Instruments Inc., and the other is the Ultrasonic detector car, operated by the Rail Service Division of Sperry Products, Inc. Both devices have been successful in locating both upper-fillet and bolt-hole cracks in rail ends within joint-bar limits.

In addition to the inspection of rail ends in open track and of (full-length) rails through highway crossings, the supersonic method has been used for inspecting rail ends in railroad crossings and in heels of switches. It has also proven its value in this field.

I am told that there are now 130 Audigage flaw detectors in service on 42 different railroads. The maximum number on any one railroad is 28 instruments, and 8 railroads have purchased 5 or more. We have 13 on the Pennsylvania and have 2 more on order.

Sperry Rail Service Ultrasonic testing has also been used by a great many railroads and I am told that they tested nearly

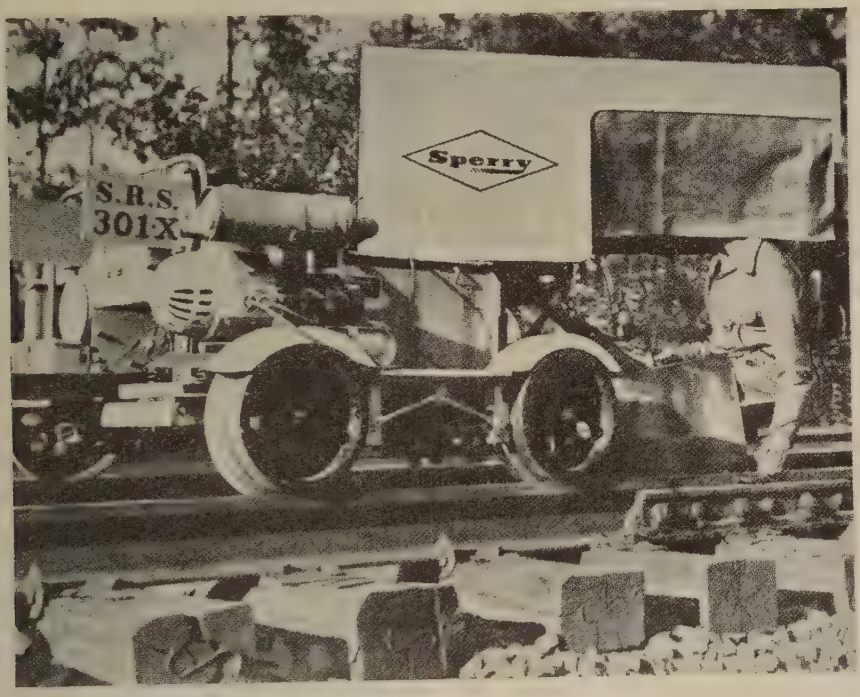


Branson Audigage supersonic rail flaw detector is rapidly becoming an important maintenance tool.

700 000 joints in 1951 and located approximately 12 000 defects. Of these about 4 500 occurred between the heads and webs and 6 500 at bolt holes while 1 400 consisted of defective welds or miscellaneous defects.

On the Pennsylvania in 1951, we tested 89 700 joints and located 3 400 defects, resulting in the removal from track of 1 487 rails. In addition to this we inspected 5 444 highway crossings and removed 417 defective rails from them. We have not classified our defects into those that occur in the upper fillet, or at the first bolt hole. Another eastern railroad in the first six months of 1951 tested 72 000 joints on one of their two regions, locating 2 444 failures, of which 1 008 were at bolt holes and 1 429 in the upper fillet, with 7 miscellaneous defects. A large western road tested 717 000 joints, removing 684 rails as a result of such inspection. Of these 266 were bolt-hole failures, while 418 were head-web separations. These last two roads used both Audigage and Sperry methods.

Any new development such as this calls for the design of a new set of reports in order that an adequate record may be kept of the results obtained. We have required our regions to record the total miles of track tested, the total joints inspected, total defects indicated, the defects verified by removal of joint bars and the total number of rails removed from track. On this report, so far, we have not distinguished between bolt-hole failures and upper-fillet cracks, but will do so in the future. There is an A. R. E. A. questionnaire being circulated at the present time which requests that reported railweb failures in the joint



Sperry Ultrasonic detector car is rapidly becoming an important maintenance tool.

be classified as bolt-hole failures, upper-fillet cracks or head-and web failures, all subdivided into service and detected failures. Such a report will probably become a part of A. R. E. A. rail statistic in the immediate future.

How fast do cracks grow?

No information that we have to date gives us any true indication of the rate of growth of cracks. Ordinarily we have not kept any records of the exact location of rails left in track with minor defects, but have kept such a record on two test miles of track during the past year, making a recheck after an interval of 12 months. This recheck showed the following results.

Inspection of 200 joints in 152-lb. rails in January 1951 showed long cracks in 10 rails which were removed, and small cracks of 1 in. and less in length in 35 rails, all of which were left in track. Inspection of the same track in November 1951 showed that one of the 1-in. cracks had grown to 7 in.. but that no new cracks had developed.

At another location in January 1951 an inspection of 208 joints in 152-lb. rails showed long cracks in three rails which were removed, and short cracks in 26 rails which were left in. Prior to reinspection, there was a service failure (bolt-hole crack) in a rail which previously showed no defect. Subsequent inspection in November 1951 showed two rails with 1-in. cracks which had grown to 8 in. whereas the defects in all other rails had not changed.

What size crack is unsafe?

Removal from track of all rails which show defects under the Audigage or the Sperry Ultrasonic car does not appear to be necessary. In fact, most railroads find small defects in such large numbers as to make their removal entirely beyond the limits of reason. Various criteria have been adopted for determining the limits of cracks which shall be allowed to remain in

track, but good judgment must be exercised in any case by a track foreman examining the defect. Most engineers seem to feel that it is unnecessary to remove rails from track with head-and-web cracks less than 1 in. in length or with bolt-hole cracks less tham 1/4 in. in length.

It is my personal opinion that safety is better served by making rather frequent rechecks of stretches of track which have many rails with small defects rather than by wholesale removal of a large number of rails having very small defects. In some cases a recheck at intervals of one year may be sufficient, in other cases a recheck may be desirable at intervals of six months or three months, or even less. This will depend on the record of service failures, the traffic and other local conditions. It seems to be desirable to recheck at frequent intervals after applying reformed or oversized bars which change the stress situation in the rail ends.

Consideration will no doubt be given in the future to keeping a record of the exact location of all small defects left in track, so that their growth may be followed. We would suggest that each interested railroad set up such a record for at least several test stretches.

Some engineers have indicated that they feel that the use of inspection instruments for locating defects in rail ends is unnecessary, or is undesirable in view of the problem presented by the large number of small defects found. The illustrations accompanying this article show some of the types of defects found and removed from track. These may serve to convince some otherwise skeptical people as to the desirability of such inspection.

M. WEISSENBRUCH & Co. Ltd.
Printer to the King
(Manag. Dir.: P. de Weissenbruch,
238, chaussée de Vleurgat, XL)

PRINTED IN BELGIUM

Edit. responsible : P. Ghilain

Bulletin of the International Railway Congress Association

CONTENTS OF THE NUMBER FOR JULY 1952.

1952 **625** .113
Bull. of the Int. Ry. Congr. Ass., No. 7, July, p. 533.
CHAPPELLET (J.). — **Transition curves.** (7 600 words & fig.)

1952 **656** .225 (43) & **656** .261 (43)
Bull. of the Int. Ry. Congr. Ass., No. 7, July, p. 551.
The new large container service of the German Railways. (3 400 words & fig.)

1952 **656** .212 (73)
Bull. of the Int. Ry. Congr. Ass., No. 7, July, p. 562.
Five acres under one roof... **Modern freighthouse at St-Louis.** (2 400 words & fig.)

1952 **669**
Bull. of the Int. Ry. Congr. Ass., No. 7, July, p. 571.
Ultrasonic equipment for metal flaw detection. (1 000 words & fig.)

1952 **385** (06 .111
Bull. of the Int. Ry. Congr. Ass., No. 7, July, p. 575.
OFFICIAL INFORMATION issued by the Permanent Commission of the International Railway Congress Association :
Final Summaries adopted at the Enlarged Meeting of the Permanent Commission at Stockholm (9th to 12th June, 1952). (5 000 words.)

1952 **385** (09.2
Bull. of the Int. Ry. Congr. Ass., No. 7, July, p. 586.
OBITUARY : Germain WILLAERT. (600 words and photograph.)

1952 **536** (06 (44)
Bull. of the Int. Ry. Congr. Ass., No. 7, July, p. 588.
IVth International Congress of industrial heating. (200 words.)

1952 **621** .132.1 (09 (42)
Bull. of the Int. Ry. Congr. Ass., No. 7, July, p. 589.
NEW BOOKS AND PUBLICATIONS : AHRONS (E.L.). — **Locomotive and train working in the latter part of the mineteenth century.** (300 words.)

1952 **385** (09.3
Bull. of the Int. Ry. Congr. Ass., No. 7, July, p. 589.
NEW BOOKS AND PUBLICATIONS : **World Railways 1950-1951.** (600 words.)

1952 **31** (3)
Bull. of the Int. Ry. Congr. Ass., No. 7, July, p. 590.
NEW BOOKS AND PUBLICATIONS : **Statistical Yearbook 1949-1950.** (300 words.)

1952 **385** .5 & **656**
Bull. of the Int. Ry. Congr. Ass., No. 7, July, p. 591.
NEW BOOKS AND PUBLICATIONS : **The co-ordination of transport : Work problems.** (600 words.)

1952 **656** 281 (54)
Bull. of the Int. Ry. Congr. Ass., No. 7, July, p. 592.
NEW BOOKS AND PUBLICATIONS : LATHAM (W.G.) and ISAACS (E.W.). — **Report on derailments.** (600 words.)

1952 **385** (08 (59)
Bull. of the Int. Ry. Congr. Ass., No. 7, July, p. 593.
NEW BOOKS AND PUBLICATIONS : SANDERS (J.O.). — **Malayan Railway Administration Report.** (400 words.)

ulletin of the International Railway Congress Association

CONTENTS OF THE NUMBER FOR AUGUST 1952.

1952 **621** .135.2 (44) & **625** .143.3 (44)
ll. of the Int. Ry. Congress Ass., No. 8, August, p. 595.
LAFAYE and VORBURGER. — **The new rail ricator of the French National Railways (S.N.C.F.).** 000 words & figs.)

1952 **621** .392 & **624**
ll. of the Int. Ry. Congress Ass., No. 8, August, p. 609.
DUBUS (J.). — **Accidents to some welded bridges der very low temperature conditions.** (1 500 words.)

1952 **625** .25
ll. of the Int. Ry. Congress Ass., No. 8, August, p. 612.
KELLER (S.). — **New driver's brake valves and tributors for modern locomotives and motor coaches.** 0 words & figs.).

1952 **625** .251
ll. of the Int. Ry. Congress Ass., No. 8, August, p. 615.
McARD (Georges W.). — **Braking of Diesel rail nicles.** (3 100 words & fig.)

1952 **621** .431.72 (45)
ll. of the Int. Ry. Congress Ass., No. 8, August, p. 625.
OREFICE (F.S.). — **The new Breda railcars, type n 880.** (5 200 words & figs.)

1952 **625** .215 (73)
Bull. of the Int. Ry. Congress Ass., No. 8, August, p. 639.
CARTY (F.J.). — **Resilient pads add to comfort on passenger cars.** (1 800 words & figs.)

1952 **625** .28 (44)
Bull. of the Int. Ry. Congress Ass., No. 8, August, p. 645.
NEW BOOKS AND PUBLICATIONS : **Locomotives des Chemins de fer français, à vapeur, électriques, Diesel-électriques et autorails** *(The locomotives of the French Railways, steam, electric, Diesel-electric and railcars).* (500 words.)

1952 **31** (3)
Bull. of the Int. Ry. Congress Ass., No. 8, August, p. 646.
NEW BOOKS AND PUBLICATIONS : **Statistical Yearbook 1951.** (200 words.)

1952 **385** (05 (43)
Bull. of the Int. Ry. Congress Ass., No. 8, August' p. 646.
NEW BOOKS AND PUBLICATIONS : **ETR, Eisenbahntechnische Rundschau** *(Technical Railway Review).* (300 words.)

1952 **624** (460)
Bull. of the Int. Ry. Congress Ass., No. 8, August, 647.
NEW BOOKS AND PUBLICATIONS : MENDIZABAL Y FERNANDEZ (D.). — **Datos utilizables para el posible estudio de una nueva instruccion para el calculo de tramos metalicos** *(Data to serve as a basis for the study of a new instruction on the calculation of metal bridges).* (400 words.)

Bulletin of the International Railway Congress Association

CONTENTS OF THE NUMBER FOR SEPTEMBER 1952.

1952 **656** .257 (493)
Bull. of the Int. Ry. Congress Ass., No. 9, September, p. 649.
DEVILLERS (L.). — **New signalling installation at Soignies station.** (9 000 words, figs. and plates.)

1952 **624** .2 & **691**
Bull. of the Int. Ry. Congress Ass., No. 9, September, p. 671.
NEUFFER (H.). — **Girders embedded in concrete for composite structures.** (1 400 words, table & figs.)

1952 **625** .14 (01 & **625** .172
Bull. of the Int. Ry. Congress Ass., No. 9, September, p. 675.
SCHMIDT (H.). — **Certification of permanent way and track inspection trolley.** (2 400 words & figs.)

1952 **621** .431.72 (42)
Bull. of the Int. Ry. Congress Ass., No. 9, September, p. 686.
The Fell locomotive of British Railways. (3 800 words & figs.)

1952 **621** .135.2
Bull. of the Int. Ry. Congress Ass., No. 9, September, p. 696.
Flame-hardening of locomotive tyres. (600 words & figs.)

Bulletin of the International Railway Congress Association

CONTENTS OF THE NUMBER FOR OCTOBER 1952.

1952 **625** .14 (01 & **625** .2 (01
Bull. of the Int. Ry. Congr. Ass., No. 10, October, p. 699.
BOUTELOUP (M.). — **The geometrical conditions of the contact between rail and wheel.** (9 000 words & figs.)

1952 **621** .135 (01
Bull. of the Int. Ry. Congr. Ass., No. 10, October, p. 723.
LÉVY (Robert). — **Simple errors and paradoxical truths relative to hunting movement.** (6 500 words, tables & figs.)

1952 **621** .438 (42)
Bull. of the Int. Ry. Congr. Ass., No. 10, October, p. 738.
British-built gas-turbine locomotive. (5 000 words & figs.)

1952 **385** (02
Bull. of the Int. Ry. Congr. Ass., No. 10, October, p. 748.
NEW BOOKS AND PUBLICATIONS : **Directory of Railway Officials & Year Book 1952-1953.** (400 words.)

1952 **625** .28
Bull. of the Int. Ry. Congr. Ass., No. 10, October, p. 748.
NEW BOOKS AND PUBLICATIONS : **Bergsteigefähigkeit und Literleistung** *(Climbing capacity and power per litre)*, by Dr. Eng. FLÖSSEL. (300 words.)

1952 **654**
Bull. of the Int. Ry. Congr. Ass., No. 10, October, p. 749.
NEW BOOKS AND PUBLICATIONS : **Fortschritte der Funktechnik und ihrer Grenzgebiete** *(Progress in radio technique and allied fields)*, by Eng. H. RICHTER. (300 words.)

1952 **656** .212 .5 (43)
Bull. of the Int. Ry. Congr. Ass., No. 10, October, p. 750.
NEW BOOKS AND PUBLICATIONS : **Rangiertechnik** *(Marshalling yard technique)*. Special number of the *Eisenbahn Technische Rundschau.* (500 words.)

1952 **385** .113 (460)
Bull. of the Int. Ry. Congr. Ass., No. 10, October, p. 751.
NEW BOOKS AND PUBLICATIONS : **Red Nacional de los Ferrocarriles Españoles : Proyecto de Memoria del Consejo de Administración. Ejercicio de 1950.** *(Spanish National Railways. Project of Report of the Administrative Council. Year 1950.)* (600 words.)

ulletin of the International Railway Congress Association

CONTENTS OF THE NUMBER FOR NOVEMBER 1952.

1952 **385** (06 .111
Bull. of the Int. Ry. Congr. Ass., No. 11, November, p. 754.
ENLARGED MEETING OF THE PERMANENT COMMISSION AT STOCKHOLM (9th-11th June 1952).
Official Information issued by the Permanent Commission of the International Railway Congress Association. — **Meetings held by the Permanent Commission at Stockholm** (9th-11th June 1952). *(Appendix 1* : List of Members of the Permanent Commission. — *Appendix 2* : List of participants. — *Appendix 3* : List of questions selected for the Agenda of the 16th Session.) (5 000 words.)

1952 **625** .162 & **656** .254 **656** .225 & **656** .261 **385**
Bull. of the Int. Ry. Congr. Ass., No. 11, November, p. 769.
ENLARGED MEETING OF THE PERMANENT COMMISSION AT STOCKHOLM (9th-11th June 1952).
Summary of Sectional discussions : *Question I* : A. What are the new safety measures taken for level crossing of railway tracks by the road in respect of the density, high tonnage and speed of the road traffic? B. Cases of level crossing of railway tracks by a road with a railway (urban or suburban) running alongside. — *Question II* : What are the quickest and most economical means to carry out door to door service for railway transports? What are the best conditions of use of containers for small miscellaneous traffic (dimensions of the containers, conditions of ownership, tariffs)? What are the packing types to be recommended? — *Question III* : Economic aspects of : *a)* discontinuing service on old railway lines; *b)* construction of new railway lines; with regard to the possibility of handling transport with other means. (25 000 words.)

1952 **625** .162 & **656** .254 **656** .225 & **656** .261 **385**
Bull. of the Int. Ry. Congr. Ass., No. 11, November, p. 826.
ENLARGED MEETING OF THE PERMANENT COMMISSION AT STOCKHOLM (9th-11th June 1952).
Summary of the Plenary Meeting held on the 11th June 1952. *(Appendix* : Final Summaries : Questions I, II and III.) (7 000 words.)

Bulletin of the International Railway Congress Association

CONTENTS OF THE NUMBER FOR DECEMBER 1952.

1952 **625** .23 (43)
Bull. of the Int. Ry. Cong. Ass., No. 12, Dec., p. 841.
KÖRNER (R.). — **The present position as regards construction of passenger coaches on the German Federal Railways.** (8 300 words & fig.)

1952 **625** .215
Bull. of the Int. Ry. Cong. Ass., No. 12, Dec., p. 861.
« **Shimmy** » **in passenger-car trucks.** (1 900 words & fig.)

1952 **625** .172 (485)
Bull. of the Int. Ry. Cong. Ass., No. 12, Dec., p. 866.
FOGELBERG (TORD). — **How track is raised and reballasted in Sweden.** (1 100 words & fig.)

1952 **625** .236
Bull. of the Int. Ry. Cong. Ass., No. 12, Dec., p. 870.
Reflections on the cleaning of the outside of railway coaches. (800 words.)

1952 **625** .212 (73)
Bull. of the Int. Ry. Cong. Ass., No. 12, Dec., p. 872.
Car wheels dynamically balanced at Burnside shops. (1 200 words & fig.)

1952 **625** .143 .3 (73)
Bull. of the Int. Ry. Cong. Ass., No. 12, Dec., p. 876.
CODE (C. J.). — **Supersonic testing of rail ends.** (1 200 words & fig.)

MONTHLY BIBLIOGRAPHY OF RAILWAYS[1]

PUBLISHED UNDER THE SUPERVISION OF

P. GHILAIN,

General Secretary of the Permanent Commission of the International Railway Congress Association.

(JULY 1952)

. 385. (02]

I. — BOOKS.

In French.

51 621 .32
IERGUES (R.).
éclairage par fluorescence.
ris, Dunod, éditeur. Un volume (16 × 25 cm) 36 pages avec 214 figures. (Prix : 1 980 fr. fr.)

51 621 .31
LBERT (A.).
éorie, fonctionnement et calcul des machines élec-es.
ris, Dunod, éditeur. Un volume (16 × 25 cm) de pages avec 370 figures. (Prix : relié toile, 2 760 fr. fr.)

51 621 .83
NRIOT (G.).
ableaux, abaques et calculs pratiques relatifs aux enages.
aris, Dunod, éditeur. Un volume (21 × 27 cm) de pages, avec 61 figures et 25 tableaux. (Prix : 1 450 r.)

51 624 .9
INLOGEL (A.).
ormules pour le calcul des cadres. Traduit sur la édition allemande, par Ch. FATIO.
aris, Ch. Béranger, éditeur. Un volume (15 × 23 cm) 86 pages, avec 1643 figures. (Prix : 3 350 fr. fr.)

951 621 .392 & 665 .882
FERIAN (D.).
ratique du soudage.
aris (VI[e]), Collection de l'Encyclopédie Roret, 12, rue utefeuille. Un volume (11.5 × 18 cm) de 256 pages, c 130 figures et 8 planches hors texte. (Prix : 390 fr. fr.)

951 625 .6 (06
ION INTERNATIONALE DES TRANSPORTS PUBLICS.
XIX[e] Congrès International (Edimbourg, 1951).
Comptes rendus détaillés.
Bruxelles, édité par le Secrétariat Général de l'Union lessus, 18, avenue de la Toison d'Or. Un volume × 27.5 cm) de 82 pages, illustré.

In German.

1951 621 .138 .5 (02
Elsners Taschenbuch für den Maschinentechnischen Eisenbahndienst 1951. Herausgegeben von O R R RIDDER und Mitarb. von R D NIEDERSTRASSER, R R WESSER und R R BAUERMEISTER.
Frankfurt (M.)-Berlin, Dr. Arthur Tetzlaff-Verlag. Din A 6, 406 Seiten mit zahlr. Abbildungen und Tabellen. (Preis : geb. D.M. 5, Vorzugspreis für Eisenbahndienststellen : D.M. 4.50.)

1951 624 (0 & 669 .1
ERDMANN (O.).
Über den Einfluss hochfester Stähle auf Gewichtsersparnis und Bauart im Stahlbrückenbau.
Berlin, Springer Verlag. 1 Band (20 × 28 cm) von 83 Seiten mit 28 Abbildungen. (Preis : 10 D.M.)

1951 69
SCHMIDT-HIEBER (O.) und SCHMIDT-HIEBER (F.).
Baustoffkunde für Techniker. Lehrbuch für Architekten, Bauingenieure und Maschineningenieure.
Stuttgart, Verlag Konrad Wittwer. Ein Band mit 74 Figuren. (Preis : D.M. 10.50.)

In English.

1951 621 .335
HAUT (F. J. G.).
Early history of the electric locomotive.
Purley, Surrey : F. J. G. Haut, 2*a*, Manahan Avenue. Published by the author (10 1/4 × 8 1/4 in.) 12 pp. of text and 4 pp. illustrations. (Price : 15 s.)

1951 62
INGLIS (C.).
Applied mechanics for engineers.
London : Cambridge University Press, 200, Euston Road, N. W. (Price : 42 s.)

(1) The numbers placed over the title of each book are those of the decimal classification proposed by the Railway Congress ointly with the Office Bibliographique International, of Brussels, (See « Bibliographical Decimal Classification as applied to Railway nce », by L. WEISSENBRUCH, in the number for November 1897, of the *Bulletin of the International Railway Congress* p. 1509).

1951 621 .132 .1 (42)
Locomotives. — A report on the industry. P. E. P. Engineering Reports. — III. P. E. P. (Political and Economic Planning), 16, Queen Anne's Gate, London, S. W. 1. (Price : 13 s.)

1951 385 (061 .4
Minutes, Fifty-third Annual Meeting. Chicago, Ill., September 10, 11 and 12, 1951. *Signal Section Proceedings. Association of American Railroads.* Vol. XLVIII, No. 2.
Published by the Signal Section, A. A. R., 59, East Van Buren Street, Chicago 5, Ill.

1952 625 .4 (42)
MORRIS (O. J.).
London's Underground. A pictorial survey.
London : Jan Allan, Limited, 282, Vauxhall Bridge Road, S. W. 1 (8 1/2 × 5 1/2 in.). Paper covers. (Price : 2 s. 6 d. net.)

1951 691
STEWARD (A.).
The design and placing of high quality concrete.
London : E. and F. N. Spon Limited, 22, Henrietta street, W. C. 2. (Price : 22 s. net.)

1951 62 (01
TABOR (D.)
The hardness of metals.
London : Oxford University Press (Geoffrey Cumberlege), Amen House, Warwick Square, E. C. 4. (Price : 15 s. net.)

1952 621
WEST (E. G.).
The welding of non-ferrous metals.
London : Chapman and Hall Ltd., 37, Essex Stre Strand, W. C. 2. (Price : 55 s. net.)

1952 625 .212 & 625
WETENKAMP (H. R.), SIDEBOTTOM (O. M.) SCHRADER (H. J.).
The effect of brake shoe action on thermal crack and on failure of wrought iron steel railway wheels.
University of Illinois Engineering Experiment Stati Bulletin No. 387. Office of publication, 358, Admi tration Building, University of Illinois, Urbana, III, U.S (Price : 60 cents.)

In Italian.

1951 621
DE GREGORIO (C.).
Su alcune caratteristiche d'esercizio della trazi nelle ferrovie da miniera con particolare riguardo sistemi ad accumulazione d'energia ed a quello termoe trico. (Estratto dalla *Rivista Mineraria Siciliana*, N° 10 luglio-ottobre, 1951.)
Palermo, S. F. Flaccovio, editore. 16 pagine (21 30 cm) con 17 figure e tabelle.

[016. 385. (05]

II. — PERIODICALS.

In French.

Annales des Travaux Publics de Belgique. (Bruxelles.)

1951 624 .8
Annales des Trav. publics de Belgique, octobre, p. 767.
DE RIES (J.). — Quelques problèmes relatifs à **l'équipement électromécanique de ponts tournants.** (15 000 mots, tableaux & fig.)

1951 691
Annales des Trav. publics de Belgique, octobre, p. 879.
FOUGNIES (R.). — **Congrès international du Béton précontraint.** Gand : 10-13 septembre 1951. (5 000 mots.)

Bulletin des C.F.F. (Berne.)

1951 385 .587 (494)
Bulletin des C.F.F., septembre, p. 136; octobre, p. 154.
RUESCH (E.). — **Les tableaux de service et de répartition des agents de train.** (2 500 mots & fig.)

1951 625 .251 (4
Bulletin des C.F.F., octobre, p. 151; novembre, p.
KELLER (A.). — Les nouvelles **prescriptions freinage** et leurs bases techniques. (3 000 mots &

1951 625
Bulletin des C.F.F., novembre, p. 160.
Wagons frigorifiques « Interfrigo ». (500 mots &

1951 621 .138 .1 (4
Bulletin des C.F.F., novembre, p. 169.
STHIOUL (Ch.). — **Les dépôts de locomotives.** (1 mots.)

Bulletin Oerlikon. (Zurich.)

1950 621
Bulletin Oerlikon, n° 285, septembre-octobre, p. 2
La **traction électrique par courant monophasé 50 pé** (20 000 mots, tableaux & fig.)

1951 621
Bulletin Oerlikon, n° 288, mars-avril-mai, p. 2164
ANDEREGG (E.). — Le nouveau **dispositif de séc Oerlikon pour véhicules de traction.** (4 500 mots &

Bulletin des Transports Internationaux par Chemins de fer. (Berne.)

51 **385** .62 & **385** .63
des transp. intern. par Chemins de fer, octobre, p. 285; novembre, p. 321.
ommissions préliminaires de **révision de la C.I.M.** e **la C.I.V.** (4 000 mots.)

---

51 **656** .24
. des transp. intern. par Chemins de fer, novembre, p. 323.
GER (G.). — La preuve en cas d'**avarie de la marchan-** (2 000 mots.)

Containers. (Paris.)

951 **656** .225 (43) & **656** .261 (43)
ıtainers, nº 6, décembre, p. 36.
e trafic des nouveaux grands containers des Chemins ′er Allemands. Un succès complet. (1 500 mots & fig.)

---

951 **656** .225 (42) & **656** .261 (42)
ıtainers, nº 6, décembre, p. 43.
Containers à pulvérulents. (Grande-Bretagne). (500 ts & fig.)

---

951 **656** .225 (44) & **656** .261 (44)
ntainers, nº 6, décembre, p. 45.
Le container repliable A.L.D. (1 500 mots & fig.)

Génie Civil. (Paris.)

951 **625** .142 .4
nie Civil, nº 3312, 1er novembre, p. 411.
Les traverses pour voies ferrées en béton précontraint. 500 mots & fig.)

1951 **656** .1 (73) & **656** .2 (73)
nie Civil, nº 3315, 15 décembre, p. 472.
Les transports ferroviaires et routiers aux Etats-Unis. 500 mots.)

1952 **629** .113 .6
énie Civil, nº 3316, 1er janvier, p. 1.
CARRARD (Ch.). — Le **gyrobus et le gyrotracteur** volant accumulateur d'énergie cinétique. (2 500 mots fig.)

1952 **62** (01 & **721** .1
énie Civil, nº 3316, 1er janvier, p. 11.
CALFAS (P.). — **Détermination pratique de la charge missible sur les semelles de fondation.** Résistance en ointe et profondeur critique des pieux. (1 500 mots.)

L'Ossature métallique. (Bruxelles.)

1951 **656** .225 & **656** .261
'Ossature métallique, octobre, p. 473.
DISCRY (L.). — Le développement des **transports e porte à porte** en Belgique et à l'étranger. (6 000 mots fig.)

1951 **656** .225 & **656** .261
L'Ossature métallique, octobre, p. 485.
KLOPFERT (A.). — **Construction des containers métalliques** par le procédé de soudage électrique par point. (1 500 mots & fig.)

1951 **621** .392
L'Ossature métallique, octobre, p. 493.
BALBACHEVSKY (G. N.). — **Congrès International de la Soudure.** — Londres et Oxford, juillet 1951. (3 500 mots & fig.)

Revue de l'Association française des Amis des Chemins de fer. (Paris.)

1951 **385** (09 (73)
Revue de l'Assoc. franç. des Amis des Ch. de fer, septembre-octobre, p. 101.
CAIRE (D.). — Le **Chemin de fer américain** en 1951. (5 000 mots & fig.)

1951 **656** .222 .1 (71 + 73)
Revue de l'Assoc. franç. des Amis des Ch. de fer, septembre-octobre, p. 110.
VUILLET. — Les **parcours à grandes vitesses des trains de voyageurs** aux Etats-Unis et au Canada en 1950. (800 mots, tableaux & fig.)

1951 **621** .335 (44)
Revue de l'Assoc. franç. des Amis des Ch. de fer, septembre-octobre, p. 113.
CAIRE (D.) & GACHE (A.). — Deux **nouvelles locomotives pour courant monophasé 20 000 V, 50 Hz,** sur la ligne Aix-les-Bains—La Roche-sur-Foron, les CC 6052 et BB 8051 de la Société Alsthom. (4 000 mots & fig.)

1951 **625** .62 (4)
Revue de l'Assoc. franç. des Amis des Ch. de fer, septembre-octobre, p. 121.
CAIRE (D.). — **Le PCC et les récents développements du Tramway** en Europe. (1 000 mots & fig.)

Revue Générale des Chemins de fer. (Paris.)

1951 **621** .33 (4)
Revue Générale des Chemins de fer, novembre, p. 525.
ARMAND. — Le rôle de l'**électrification en courant industriel 50 périodes** dans la modernisation et l'unification des Chemins de fer européens. (Discours d'ouverture des *Journées techniques d'Information d'Annecy*, 12-15 octobre 1951). (8 000 mots.)

1951 **621** .33
Revue générale des Chemins de fer, novembre, p. 536.
PARODI. — De l'électrification en courant continu 1 500 V à l'**électrification en courant monophasé 50 Hz.** (4 000 mots & tableaux.)

1951 **621** .33
Revue générale des Chemins de fer, novembre, p. 545.
GARREAU. — Les divers problèmes techniques que soulève la **traction en monophasé 50 Hz.** (5 000 mots.)

1951 **621** .335
Revue générale des Chemins de fer, novembre, p. 551.
NOUVION. — **Les locomotives dans les divers systèmes de traction électrique** et la supériorité du monophasé 50 Hz. (6 000 mots & fig.)

1951 **621** .331 & **621** .332
Revue générale des Chemins de fer, novembre, p. 561.
L'électrification en courant monophasé 50 Hz et les Journées techniques d'Information d'Annecy (12-15 octobre 1951). **Les installations fixes.** (30 000 mots, tableaux & fig.)

1951 **621** .333
Revue générale des Chemins de fer, novembre, p. 611.
L'électrification en courant monophasé 50 Hz et les Journées techniques d'Information d'Annecy (12-15 octobre 1951). **Les moteurs des engins de traction.** (40 000 mots & fig.)

1951 **621** .335
Revue générale des Chemins de fer, novembre, p. 689.
L'électrification en courant monophasé 50 Hz et les Journées techniques d'Information d'Annecy (12-15 octobre 1951). **Les engins de traction.** (8 000 mots, tableaux & fig.)

Travaux. (Paris.)

1951 **62** (01 & **691**
Travaux, août, p. 449; septembre, p. 501.
DURIEZ (M.). — **Etude de quelques causes d'altération des bétons hydrauliques dues à l'action simultanée des ambiances et des contacts.** Actions particulières ou combinées de destruction dues à l'eau, à la nature des sols, à la température et à l'hygrométrie ambiantes. Préventions et remèdes. (10 000 mots & fig.)

1951 **62** (01
Travaux, septembre, p. 526.
MALLET (Ch.). — Note sur un des principes fondamentaux de la **résistance des matériaux.** (5 000 mots, tableaux & fig.)

1951 **624** .2
Travaux, septembre, p. 533.
TOTH (I.). — **Calcul rapide des poutres continues.** (1 500 mots, 4 tableaux & fig.)

1951 **625** .13 (44) & **691** (44)
Travaux, octobre, p. 543.
CARPENTIER (L.). — **La reconstruction du viaduc de Lessart.** Contribution à l'étude des déformations lentes du béton. (15 000 mots & fig.)

In German.

Der Eisenbahnbau. (Frankfurt-Main.)

1951 **624** (0
Der Eisenbahnbau, August, S. 181.
SAHLING (B.). — Über die **Prüfung der Brücken,** Hallen und Dächer (III). (3 000 Wörter & Abb.)

1951 **624**
Der Eisenbahnbau, Oktober, S. 219; November, S. 2
SCHLEGEL (H. W.). — **100 Jahre Druckluftgr dung im Brückenbau.** (10 000 Wörter & Abb.)

1951 **656** .212
Der Eisenbahnbau, Oktober, S. 227.
GÖTSCHEL (J.). — Das Entwerfen und der E von **Güterhallen.** (2 500 Wörter & Abb.)

1951 **625** .172 (
Der Eisenbahnbau, Oktober, S. 236.
WENDLAND (O.). — Ein **neues Entkrautungsger** (1 000 Wörter & Abb.)

1951 **625** .1
Der Eisenbahnbau, Oktober, S. 238.
AMBERGER (E.). — Das **Nalenzverfahren** ungleicher Teilung der Standlinie und wenig Wechs punkten. (2 000 Wörter & Abb.)

1951 **625** .13 (
Der Eisenbahnbau, November, S. 243.
NEUFFER (H.). — Beitrag zur **Verstärkung v Bogenbrücken.** (3 800 Wörter & Abb.)

1951 **625** .142
Der Eisenbahnbau, November, S. 257.
STEINWEDE (A.). — Die **Lebensdauer von Ho schwellen.** (4 500 Wörter & Abb.)

Der Eisenbahningenieur. (Frankfurt-Main)

1951 **656** .222
Der Eisenbahningenieur, September, S. 121.
STEFFENS (B.). — **Verkehrswerbende Reisezugl dung.** (3 000 Wörter & Abb.)

1951 **621** .138 .3 (
Der Eisenbahningenieur, September, S. 126.
SPÖHRER (K.). — Die **Ausbesserung der Dampflo und anderer Triebfahrzeuge** in den Werkstätten Bahnbetriebswerke. (2 500 Wörter.)

1951 **625** .17 (4
Der Eisenbahningenieur, September, S. 128.
BECKS (J.). — Die **Unterhaltung der Gleisanlag** bei den Niederländischen Eisenbahnen. (800 Wör & Abb.)

1951 **625** .143 .4 & **665** .
Der Eisenbahningenieur, September, S. 130.
KUNZ (H.) & RAABE (W.). — **Die autogene Sch nenschweissung als konstruktives Fertigungsmittel Eisenbahnoberbau.** (3 000 Wörter & Abb.)

Elektrische Bahnen. (München.)

1951 **621** .335 (
Elektrische Bahnen, Oktober, S. 253.
OHL (W.). — Die **50 Hz-Höllentalbahn-Lokomot** der A. E. G. (10 000 Wörter & Abb.)

51 **621** .332
trische Bahnen, Oktober, S. 263; November, S. 285.
LB (E.). — Die **unsymmetrische Belastung des stromnetzes durch Einphasenwechselstrombahnen 50** (10 000 Wörter, Tabellen & Abb.)

---

51 **621** .33 (43)
trische Bahnen, Oktober, S. 268.
DEHM (B.). — Eröffnung des **elektrischen Zugbe-es** auf der Strecke Ludwigsburg-Bietigheim. (3 000 ter & Abb.)

---

51 **625** .2 : **625** .62 (43)
trische Bahnen, Oktober, S. 271.
TETZA (G.). — **Neuer Strassenbahn-Grossraumzug** Strassenbahn Hannover. (2 000 Wörter & Abb.)

---

51 **621** .135 .4 & **625** .215
trische Bahnen, November, S. 277; Dezember, S. 319.
EUMANN (H.). — Grundzüge der **Führung der enenfahrzeuge** (10 000 Wörter & Abb.)

---

51 **625** .41 (43)
trische Bahnen, November, S. 293.
LADIGAU (A.). — Die **Wuppertaler Schwebebahn.** 00 Wörter & Abb.)

---

nternationales Archiv für Verkehrswesen. (Mainz.)

51 **656** .225 & **656** .261
Archiv. für Verkehrswesen, nr 19, 1. Oktober-heft, S. 445.
r. BÄSELER. — Das **Gesicht des Behälterbahnhofs** die multiple Hängebahn. (5 000 Wörter.)

---

51 **656** .212 .5
Archiv. fur Verkehrswesen, nr 21, 2. November-heft, S. 491.
r. BÄSELER. — Der natürliche **Rangierbahnhof.** 00 Wörter & Abb.)

---

51 **625** .28
Archiv. für Verkehrswesen, nr 23, 1. Dezember-heft, S. 537.
RECHSLER (F.). — **Motorisierung der Zugför-ung.** (6 000 Wörter & Abb.)

In English.

Engineering. (London.)

951 **621** .132 .1 (42) & **621** .132 .6 (42)
gineering, August 3, p. 139.
Mixed-traffic 2-6-4 tank locomotives, British Railways. 200 words & fig.)

---

951 **656** .211 .7 (42)
gineering, August 3, p. 140.
Twin-screw motorship for Harwich-Zeebrugge ferry vice. (2 000 words & fig.)

1951 **621** .431 .72 (59)
Engineering, August 10, p. 172.
Diesel-electric locomotives for Ceylon. (1 500 words & fig.)

1951 **621** .132 .1 (945)
Engineering, August 24, p. 237.
4-6-4 locomotive for Victorian Government Railways. (1 200 words & fig.)

1951 **691**
Engineering, September 14, p. 345.
CLARKSON (P.). — **Heat-treated concrete.** (4 000 words, fig. & tables.)

1951 **62** (01 **& 691**
Engineering, September 21, p. 356.
GRASSAM (N. S. J.). — **Tests on concrete** with electrical-resistance strain gauges. (4 000 words & fig.)

1951 **621** .431 .72 (8)
Engineering, September 21, p. 364.
500-B.H.P. **Diesel-mechanical locomotive.** (2 000 words & fig.)

1951 **62** (01
Engineering, October 5, p. 445.
ROBERTSON (T. S.). — **Brittle fracture of mild steel.** (5 000 words & fig.)

1951 **625** .243 (42)
Engineering, October 19, p. 493.
Standard 12-ton covered goods van. (500 words & fig.)

The Engineer. (London.)

1951 **621** .132 .1 (944)
The Engineer, October 19, p. 488; October 26, p. 515.
PAULIN (G. H.). — « **D 58** » **class locomotives** for New South Wales Railways. (5 600 words, tables & fig.)

1951 **625** (42)
The Engineer, November 9, p. 580.
QUARTERMAINE (A. S.). — **The railway civil engineer to-day.** (2 400 words.)

1951 **621** .132 .1 (71 + 73)
The Engineer, November 16, p. 610; November 23, p. 642; November 30, p. 678; December 7, p. 714; December 14, p. 750; December 21, p. 786.
LIVERSAY (E. H.). — **The end of an era** *(to be continued).* (16 600 words & fig.)

1951 **621** .135 .2 (42)
The Engineer, November 16, p. 633.
Roller bearing axleboxes on the standard locomotives. (1 200 words & fig.)

1951 **621** .134 .4 (42)
The Engineer, November 23, p. 662.
POULTNEY (E. C.). — **Compound locomotives** — 1901. (2 900 words & fig.)

Mechanical Engineering. (New-York.)

1951 **62** (01 & **669** .1
Mechanical Engineering, December, p. 979.
LEYGHTON COLLINS (W.). — **Physical and mechanical properties of cast iron.** (2 600 words & tables.)

Modern Transport. (London.)

1951 **625** .13 (42)
Modern Transport, October 6, p. 11.
Strengthening a viaduct. (700 words & fig.)

1951 **621** .431 .72
Modern Transport, October 13, p. 5.
Railway oil engines. — Results of Maybach research. (600 words & fig.)

1951 **625** .615 (42)
Modern Transport, November 3, p. 7.
Traders and Railways. — Private siding arrangements criticised. (1 300 words & fig.)

1951 **625** .17
Modern Transport, November 10, p. 13.
Powered permanent way machinery. (2 000 words & fig.)

1951 **621** .132 .1 (73)
Modern Transport, November 17, p. 7.
Famous high-speed locomotives. (2 400 words & fig.)

The Oil Engine. (London.)

1951 **621** .431 .72 (85)
The Oil Engine, November, p. 277.
Mechanical transmission 500 B.H.P. locomotives. (600 words & fig.)

1951 **625** .17 (42)
The Oil Engine, November, p. 300.
Mechanized railway-track maintenance. (700 words & fig.)

1951 **621** .431 .72 (42)
The Oil Engine, December, p. 322.
Railcar progress in Ireland. (800 words & fig.)

1951 **621** .438 (73)
The Oil Engine, December, p. 334.
Passenger loco. powered by twin gas turbines. (1 200 words & fig.)

Railway Age. (New York.)

1951 **625** .234 (73)
Railway Age, September 3, p. 59.
How the Texas & Pacific uses **steam generator cars.** (1 000 words & fig.)

1951 **656** .25 (
Railway Age, September 10, p. 47.
How the B. & M. **eliminated 22 miles of second tra** (2 000 words & fig.)

1951 **621** .431 .72 (
Railway Age, September 24, p. 38.
MITCHELL (F. K.). — How future plans should made for **Diesel-electric facilities.** (2 200 words & f

---

1951 **656** .212 (
Railway Age, October 1, p. 100.
How special design features enhance **freighthc mechanization.** (2 100 words & fig.)

1951 **621** .431 .72 (
Railway Age, October 22, p. 39.
THOMAS (F.). — **Surprising facts diclosed by Di wheel-slippage investigation.** (3 000 words & fig.)

1951 **625** .244 (
Railway Age, October 29, p. 35.
Economy in operation with mechanically cooled re gerator cars. (1 200 words & fig.)

1951 **656** .212 .5 (
Railway Age, November 12, p. 48.
C.P.R. « Road tests » its first retarder yard. (1 words & fig.)

1951 **621** .431 .72
Railway Age, November 19, p. 53.
BLOSS (E. K.). — **Diesel locomotive progress** and sc problems it entails. (3 600 words & fig.)

1951 **621** .431 .72
Railway Age, November 19, p. 62.
PEEBLES (E. L.). — **Export type Diesel-elec locomotives.** (1 600 words & fig.)

1951 **621** .431 .72
Railway Age, November 26, p. 40.
POULTNEY (E. C.). — **British 1600 HP locomc parallels American Diesels.** (1 800 words & fig.)

1951 **385** .1 (73) & **656** .2
Railway Age, December 3, p. 77.
GROSVENOR PLOWMAN (E.) ...chats ab **railroad passenger deficits** and truck use of public h ways. (1 500 words.)

1951 **656** .254
Railway Age, December 3, p. 94.
How the Union Railroad saves time with radio. (1 words & fig.)

1951 **625** .17
Railway Age, December 10, p. 49.
All-out ballast cleaning... roadbed section overha to subgrade. (1 500 words & fig.)

Railway Gazette. (London.)

1951 **656 .25 (42)**
ailway Gazette, September 7, p. 266; September 14, p. 291.
New power signalling at York. (6 000 words, graphs fig.)

1951 **621 .431 .72 (41)**
ailway Gazette, September 7, p. 268.
Diesel train in Northern Ireland. (350 words & fig.)

1951 **656 .283 (42)**
ailway Gazette, September 7, p. 274.
Ministry of Transport Accident Report. Alloa Junction, cottish Region, British Railways; January 10, 1951. 100 words & one graph.)

1951 **621 .139 (42)**
ailway Gazette, September 14, p. 296.
Re-equipment of locomotive stores at Darlington orks. (1 000 words & fig.)

1951 **656 .281 (42)**
ailway Gazette, September 14, p. 302.
Ministry of Transport Accident Report. Greenford, Western Region, British Railways; December 20, 1950. 000 words & one graph.)

1951 **621 .132 .3 (945)**
ailway Gazette, September 21, p. 319.
Locomotives for Victorian Government Railways. 2 000 words & fig.)

1951 **624 (73)**
ailway Gazette, September 21, p. 321.
A new type of **bridge superstructure.** Low initial and ecovering costs are important advantages claimed. 500 words & fig.)

1951 **625 .23 (42)**
Railway Gazette, September 21, p. 323; September 28, p. 351; October 5, p. 407.
Construction of British Railways **standard coaches.** 2 400 words & fig.)

1951 **313 .385 (73)**
Railway Gazette, September 28, p. 346.
The Pennsylvania Railroad. **A review of financial and operating results.** (2 500 words & tables.)

1951 **656 .254 (42)**
Railway Gazette, September 28, p. 348.
Traffic control at Burntisland, Scottish Region. Operating organisation in a district recently provided with a modernised **communications system.** (2 000 words, one map & fig.)

1951 **625 .234 (42)**
Railway Gazette, October 5, p. 374.
Air conditioning of railway coaches. (1 600 words & fig.)

1951 **625 .243 (42)**
Railway Gazette, October 19, p. 433.
British Railway **standard wagons.** (600 words & fig.)

1951 **621 .132 .1 (941)**
Railway Gazette, October 26, p. 461.
Modern general-purpose locomotives for Western Australia. (3 000 words & fig.)

1951 **625 .617 (41)**
Railway Gazette, October 26, p. 471.
New road rail transfer system. (200 words & fig.)

1951 **625 .245 (42)**
Railway Gazette, November 2, p. 486.
British Railways standard wagons. (700 words & fig.)

1951 **621 .332 (485)**
Railway Gazette, November 2, p. 488.
Supervisory control of overhead distribution. (2 200 words & fig.)

1951 **625 .17 (42)**
Railway Gazette, November 2, p. 492; November 9, p. 520; November 23, p. 576; November 30, p. 601.
Mechanised appliances for permanent way maintenance. (5 200 words & fig.)

1951 **621 .133 .1 (89)**
Railway Gazette, November 9, p. 517.
Freight locomotives for Uruguay. (400 words & fig.)

1951 **656 .212 .5 (42)**
Railway Gazette, November 16, p. 543; November 23, p. 570; December 7, p. 627; December 21, p. 683; December 28, p. 712.
Modernised marshalling yard at Toton. (14 000 words & fig.)

1951 **625 .232 (42)**
Railway Gazette, November 30, p. 603.
New sleeping cars for British Railways. (1 400 words & fig.)

Diesel Railway Traction. (London.)

1951 **625 .28 (42)**
Diesel Railway Traction, May, p. 99.
McARD (G. W.). — **Future motive power of British Railways.** (2 400 words & fig.)

1951 **621 .431 .72 (45)**
Diesel Railway Traction, June, p. 124.
Advanced **main-line railcars** in Italy. (1 300 words & fig.)

1951 **621 .431 .72 (43)**
Diesel Railway Traction, June, p. 130.
Important **railbus developments** in Germany. (2 700 words & fig.)

1951 **621** .431 .72
Diesel Railway Traction, June, p. 136; July, p. 159.
BOWLER (J. E.). — Auxiliary services of the **Diesel-electric locomotive.** (2 800 words & fig.)

1951 **621** .431 .72 (62)
Diesel Railway Traction, September, p. 209.
Shunting locomotives for Egypt. (500 words & fig.)

1951 **621** .431 .72
Diesel Railway Traction, September, p. 211.
Resistance, power requirements, and performances of railcars. (1 800 words & fig.)

1951 **621** .431 .72 (45)
Diesel Railway Traction, September, p. 215.
Luxury Italian railcar. (500 words & fig.)

1951 **621** .431 .72 (729)
Diesel Railway Traction, October, p. 221.
Railcars for Jamaica. (1 200 words & fig.)

1951 **621** .431 .72 & **625** .214
Diesel Railway Traction, October, p. 224.
HOWARD (R.). — **Effect of wheel size on bearing rating of railcar axleboxes.** Practical significance of fatigue characteristics of roller bearings. (1 500 words & fig.)

1951 **621** .431 .72
Diesel Railway Traction, October, p. 227.
A new range of Maybach **oil engines.** (1 800 words & fig.)

Railway Mechanical and Electrical Engineer. (New York.)

1951 **621** .431 .72 (73)
Railway Mechanical and Electrical Engineer, September, p. 69.
McDONALD (G. R.). — **The wachtdog of the Diesel-electric locomotive.** (4 000 words, tables & fig.)

1951 **625** .215 (73)
Railway Mechanical and Electrical Engineer, October, p. 68.
CARTY (F. J.). — **Resilient pads add to comfort on passenger cars.** (1 200 words & fig.)

1951 **625** .25 (06 (73)
Railway Mechanical and Electrical Engineer, November, p. 67.
Air brake men discuss a wide variety of problems (9 000 words.)

1951 **621** .135 .2 (73) & **621** .431 .72 (73)
Railway Mechanical and Electrical Engineer, December, p. 65.
Turning steel wheels with carbide tools. (1 800 words & fig.)

In Danish (= 439.81).

Ingeniøren. (Copenhagen.)

1951 **625** .143 .5 (489) = 439
Ingeniøren, No. 51, p. 850.
BENDTSEN (P.). — **Elastic spikes.** (1 100 wo & fig.)

In Spanish.

Ferrocarriles y Tranvias. (Madrid.)

1951 **625** .
Ferrocarriles y Tranvias, octubre, p. 401.
GALAN GUERRERO (A.). — **Engrase de cojine de vehículos ferroviarios por chorro de aceite.** (4 palabras & fig.)

1951 **656** (4
Ferrocarriles y Tranvias, octubre, p. 407.
CUBILLO TORRES (F.). — La **coordinación** de transportes terrestres. (2 000 palabras.)

1951 **625** .2 : **625** .62 (4
Ferrocarriles y Tranvias, octubre, p. 410.
El **nuevo tipo de tranvia de gran capacidad,** de Bruse Un ejemplo de investigación practica con cuatro pro tipos. (3 000 palabras & fig.)

Revista de Obras publicas. (Madrid.)

1951 **625**
Revista de Obras publicas, octubre, p. 471.
BARCELO (F.). — **Perforación de tuneles en ro** (4 000 palabras & fig.)

1951 **721**
Revista de Obras publicas, noviembre, p. 509.
IMAZ (G. S.) & DIEZ-CANEDO (R. M.). — Estud sobre las cargas criticas, limites entre la zona elas y la zona plastica, y aplicación de la formula de Fr lich al calculo de tablestacados profundos de **consoli ción de terrenos.** (3 000 palabras & fig.)

1951
Revista de Obras publicas, diciembre, p. 578.
ANGULO ALVAREZ (A.). — Caracteristicas **hormigon vibrado.** (2 000 palabras & fig.)

In Italian.

Ingegneria ferroviaria. (Roma.)

1951 **621**
Ingegneria ferroviaria, ottobre, p. 705.
GIORGI (A.). — Misure sul **circuito di ritorno ferrovie elettrificate.** (3 200 parole & fig.)

1951 **656** .21 (45)
gegneria ferroviaria, ottobre, p. 713.
EULA (M.). — **Organizzazione dei servizi** nella nuova
zione di Roma Termini. (6 000 parole & fig.)

1951 **656** .256
gegneria ferroviaria, ottobre, p. 727.
RIGHI (R.). — **I circuiti di binario** e loro condizioni
impianto e di esercizio in territorio elettrificato a
rrente continua *(continuazione)*. (7 000 parole & fig.)

1951 **725** .31 : **621** .3 (45)
gegneria ferroviaria, ottobre, p. 751.
Gli **impianti elettrici ed elettromecanici della Stazione**
Roma Termini *(continuazione)* :
BRIZIO (E.). — VII : **Ascensori e montacarichi.** —
UCARELLI (G.). — VIII : **Orologi elettrici.** — LUCA-
ELLI (G.). — **Impianti postali.** (6 000 parole & fig.)

1951 **624** (0
gegneria ferroviaria, novembre, p. 793.
CORBELLINI (G.). — Sugli **strumenti di misura dei**
nomeni oscillatori di carattere meccanico. (1 000 parole.)

1951 **721** .1
gegneria ferroviaria, novembre, p. 795.
de ANGELIS D'OSSAT (G.). — **I terreni di fonda-**
one. Appunti di geologia applicata. (6 000 parole & fig.)

1951 **621** .33 (45)
gegneria ferroviaria, novembre, p. 805.
CUTTICA (A.) & ZATTONI (T.). — **L'elettrifica-**
one ferroviaria. Elettrificazione della rete F. S. e
obabile limite del suo sviluppo. (4 000 parole & fig.)

1951 **621** .431 .72 (73)
gegneria ferroviaria, novembre, p. 811.
CAVAGNARO (G.). — La **trazione Diesel-elettrica**
gli Stati Uniti d'America. (4 000 parole & fig.)

1951 **656** .225 (4) & **656** .261 (4)
gegneria ferroviaria, novembre, p. 821.
DISCRY (L.). — Lo sviluppo dei **trasporti da porta**
porta nel Belgio e negli altri Paesi europei. (6 000
arole & fig.)

Politica dei Trasporti. (Roma.)

1951 **625** .42 (44)
olitica dei Trasporti, n° 1, maggio, p. 12; n° 4, agosto,
p. 119.
TOSTI (G.). — **I cinquanta anni di vita del « Metro »**
i Parigi. (6 000 parole & fig.)

1951 **656**
olitica dei Trasporti, n° 2, giugno, p. 53.
GUZZANTI (C.). — **Coordinamento dei trasporti**
rrestri. (1 500 parole.)

1951 **388** (45)
olitica dei Trasporti, n° 3, luglio, p. 84.
VALLECCHI (U.). — La **sistemazione dei trasporti**
rbani e foranei di Roma. (5 000 parole & fig.)

Trasporti Pubblici. (Roma.)

1951 **621** .335 (45)
Trasporti Pubblici, agosto, p. 879.
BURANELLI (A.). — La **trasformazione del materiale**
rotabile della Ferrovia Roma-Lido. (4 000 parole & fig.)

1951 **625** .42
Trasporti Pubblici, agosto, p. 919.
IMMIRZI (V.). — Aumento della zona d'influenza
delle **Ferrovie metropolitane.** (1 500 parole & fig.)

1951 **656** (42)
Trasporti Pubblici, ottobre, p. 1143.
ROBERT (G.). — **Politica, economia e tecnica dei**
trasporti in Gran Bretagna. (15 000 parole & fig.)

1951 **621** .431 .72 (44)
Trasporti Pubblici, ottobre, p. 1169.
Locomotori Diesel per l'esercizio di linee secondarie.
(1 700 parole & fig.)

In Netherlands.

Spoor- en Tramwegen. (Utrecht.)

1951 **625** .162 (492) & **656** .254 (492)
Spoor- en Tramwegen, n^{r} 24, 29 November, p. 397.
Samenvatting van de lezing van Ir. F. Q. den Hollander over **het overwegvraagstuk** bij gelegenheid van de negende wegverkeersdag van de K.N.A.C. op 26 October 1951 in Pulchri Studio te Den Haag. (3 000 woorden & fig.)

1951 **625** .173 (492)
Spoor- en Tramwegen, n^{r} 24, 29 November, p. 402.
DE NIE (F. C.). — Het **leggen van spoor N.S. 63 op spoorbanen waarvan de sporen dagelijks slechts gedurende korte tijd buiten dienst kunnen worden gesteld.** (2 500 woorden & fig.)

1951 **625** .232 (4)
Spoor- en Tramwegen, n^{r} 25, 13 December, p. 413.
RAMEIJER (G. H.). — **75 jaar Compagnie Internationale des Wagons-Lits et des Grands Express Européens.** (4 000 woorden & fig.)

In Swedish (439.71).

Spårväg och Buss. (Stockholm.)

1951 **711** (483) = 439.71
Spårväg och Buss, No. 9, p. 139.
OEH (R.). — Current problems in view **of urban planning in Stockholm.** (4 900 words.)

M. Weissenbruch & Co., Ltd., Printer to the King, 49, rue du Poinçon, Bruxelles.

MONTHLY BIBLIOGRAPHY OF RAILWAYS[1]

PUBLISHED UNDER THE SUPERVISION OF

P. GHILAIN,

General Secretary of the Permanent Commission of the International Railway Congress Association.

(AUGUST 1952)

[016. 382. (02]

I. — BOOKS.

In French.

1952 — 621 .13 (02

HAPELON (A.).

La locomotive à vapeur. Tome I (2e édition).

Paris (6e), Baillière & Fils, éditeurs, 19, rue Hautefeuille. Un volume (21 × 27 cm) de 664 pages, avec 8 figures et 8 planches hors texte. (Prix : 7 000 fr. fr.)

1951 — 691

OÜARD (A.).

Béton armé, flexion simple et composée. 4e édition.

ome I : *Section économique des poutres, nervures, urdis pleins et hourdis creux, poteaux fléchis; armares tendues, armatures comprimées, étriers.*

En vente chez l'auteur A. Coüard, 44, rue Paul arruel, Paris et à la Librairie Eyrolles, 61, boulevard int-Germain, Paris (Ve). Une brochure (21 × 31 cm), pages illustrées, plus un hors-texte. (Prix : 650 fr. fr.)

1951 — 621 (02

ONTAINE (R.).

Formulaire de construction mécanique. 4e édition.

Paris, Ch. Béranger, éditeur. Un volume (9 × 14 cm) 442 pages, avec de nombreuses figures. (Prix : 30 fr. fr.)

1951 — 621 .33 (44)

Journées d'information sur la traction électrique par ourant monophasé de fréquence industrielle. Annecy, 2 au 15 octobre 1951.

Paris, édité par la S.N.C.F. Un recueil de 31 rochures formant un ensemble de 247 pages illustrées.

1951 — 62 (01

ÉVI (F.) & PIZZETTI (G.).

Fluage, plasticité, précontrainte.

Paris, Dunod, éditeur. Un volume (16 × 25 cm) de 80 pages, avec 160 figures. (Prix : 3 900 fr. fr.)

1951 — 691

OSSIER (H.).

La pathologie du béton armé.

Paris, Dunod, éditeur. Un volume (14 × 22 cm) de 00 pages, avec 50 figures. (Prix : 480 fr. fr.)

1951 — 313 : 656 (4)

NATIONS UNIES. COMMISSION ÉCONOMIQUE POUR L'EUROPE. DIVISION DES TRANSPORTS.

Bulletin annuel de Statistique de Transports, 1950.

Genève, édité par l'Organisme nommé ci-dessus. Une brochure (21 × 28 cm) de 76 pages, avec tableaux et graphiques.

1951 — 313 : 656 (494)

OFFICE FÉDÉRAL DES TRANSPORTS (Suisse).

Statistique suisse des Transports, 1950.

Berne, publié par l'Office Fédéral des Transports. Un volume (21 × 30 cm) de 144 pages, avec 9 graphiques hors texte (en français et allemand). (Prix : 12 fr. suisses.)

In German.

1952 — 625 .14 (02

BESSER (F.).

Kommentar zu den Eisenbahn- Bau- und Betriebsordrungen für die Eisenbahnen des allgemeinen Verkehrs. 5. Auflage von 1951.

Frankfurt a. Main, Verkehrswissenschaftliche Lehrmittelgesellschaft m.b.H. XVI und 364 Seiten. Grösse DIN A 5. (Preis : in Ganzleinen solide gebunden, D.M. 20.—.)

1951 — 656 .235

COUVÉ (R.).

Die Eisenbahn- Güterabfertigung. Teil I : *Abfertigungs- und Ladedienst.* Teil II : *Haftung im Güterverkehr, Ermittlungsdienst, Tarifwesen, Güterwagendienst, u.s.w.*, 8te Auflage.

Frankfurt a. Main, Verkehrswissenschaftliche Lehrmittelgesellschaft m.b.H.

1947 — 625 .14 (01 & 625 .2 (01

FÖPPL (L.).

Die strenge Lösung für die rollende Reibung.

München, Leibniz Verlag. 1 Band Gr.-8°, 44 Seiten mit 13 Abbildungen. (Preis : brosch. 6 D.M.)

(1) The numbers placed over the title of each book are those of the decimal classification proposed by the Railway Congress onjointly with the Office Bibliographique International, of Brussels, (See « Bibliographical Decimal Classification as applied to Railway cience », by L. WEISSENBRUCH, in the number for November 1897, of the *Bulletin of the International Railway Congress*, p. 1509.)

1951 385 .114

MROSS (M.).

Die Linienleistungs- und erfolgsrechnung der öffentlichen Verkehrsbetriebe.

Hamburg, Albis-Verlag. 91 Seiten. (Preis : D.M. 18.—.)

1952 621 .133

ZINZEN (A.).

Dampfkessel und Feuerungen.

Berlin, Göttingen, Heidelberg, Springer-Verlag. 1 Band XII/358 Seiten, mit 170 Abbildungen im Text und 44 Berechnungstafeln. (Preis : Ganzl. D.M. 31.50.)

In English.

1952 656 .22

AHRONS (E.L.).

Locomotive and train working in the latter part of the Nineteenth Century. (Volume II.)

Cambridge : W. Heffer & Sons Ltd. One volume (6 × 8 3/4 inches) of 175 pages. (Price : 18s.)

1952 669

BASHFORTH (G.R.).

The manufacture of iron and steel. Volume II : *Steel production.*

London : Chapman and Hall, Limited, 37, Essex Street, Strand, W.C. 2. (Price : 45s. net.)

1952 621 .438 (42)

British-built gas-turbine locomotive. Reprinted from *The Railway Gazette.*

London : Tothill Press Ltd., 33, Tothill Street, S.W. 1 (11 1/2 × 8 1/2 inches). Illustrated. Paper covers. (Price : 5s. net.)

1952 621 .33

COULTHARD (W.B.).

Transients in electric circuits using the heaviside operational calculus.

London : Sir Isaac Pitman and Sons, Limited, 39, Parker Street, W.C. 2. (Price : 32s. 6d.)

1951 624 .51

DE PATER (A.D.).

Some new points of view in calculating suspension bridges.

Reprint from the eleventh volume of the « Publication » of the International Association for Bridge and Structural Engineering, at Zurich. (110 pages, tables & fig.)

1952

FABER (O.).

Reinforced concrete.

London : E. and F.N. Spon Limited, 22, Henrie Street, W.C. 2. (Price : 30s.)

1952

Fire protection and accident prevention year bo 1952. Compiled by G. F.D. PRATT.

London : Berm Brothers, Ltd., Bouverie Hou Fleet Street, E.C. 4. (Price : 10s. 6d.)

1952

MORTLOCK (J.R.) and HUMPHREY DAVI (M.W.).

Power system analysis.

London : Chapman and Hall, Limited, 37, Es Street, Strand, W.C. 2. (Price : 45s. net.)

1952 385 (09 (

NOCK (O.S.).

British Trains. Past and Present.

London : B.T. BATSFORD Limited, 15, No Audley Street, W. 1 (8 3/4 × 5 3/4 inches), 118 pag illustrated. (Price : 16s.).

In Italian.

1951 656 .211 (

COLLEGIO DEGLI INGEGNERI FERROVIA ITALIANI.

Roma Termini.

Roma, edita dal Collegio Ingegneri Ferroviari Italia Piazza Croce Rossa. Un volume di 204 pagine, formato chiuso 22.5 × 29 cm, in carta patinata, ill trato da 220 figure e 22 grandi tavole, in parte a col (Prezzo : 1800 lire.)

1952 621 .431.72 & 621 .431

Prof. Ing. Camillo de GREGORIO.

Sulle curve di impiego del motore a combusti interna nell' autolocomozione stradale e ferroviaria, particolare riguardo all' influenza della temperatura.

Roma, « Ingegneria Ferroviaria », estratto de N. Marzo-Aprile 1952. 26 pagine con 32 figure.

1952 385 : 625 .52 (

FEDERAZIONE NAZIONALE IMPRESE TR PORTI (F.E.N.I.T.).

Il Convegno delle aziende ferrotranviarie, promo dalla F.E.N.I.T. sotto gli auspici del Ministero Trasporti (Roma, 6-7 dicembre 1951).

Roma, F.E.N.I.T., Via S. Martino della Battaglia 44 pagine.

[016. 385. (05]

II. — PERIODICALS.

In French.

ulletin de documentation de l'U.I.C. (Paris.)

1951 **656** (71)
ulletin de documentation de l'U.I.C., septembre, p. 107.
Le **rapport de la Commission Royale des Transports** Canada. (2 000 mots.)

1951 **621** .8
ulletin de documentation de l'U.I.C., octobre, p. 119.
L'accouplement Pulvis (Autriche). (500 mots & fig.)

Bulletin de la Société des Ingénieurs Civils de France. (Paris.)

1951 **62** (01
ull. de la Soc. des Ing. civils de France, fascicule n° 13, p. 171.
L'HERMITE (R.). — Méthode d'**auscultation des ıvrages par la détermination de la vitesse du son.** 000 mots.)

1951 **669**
ull. de la Soc. des Ing. civils de France (mémoires), fascicule n^{os} 1 à 4, p. 1.
CHEVENARD (P.). — **La précision en métallurgie la métallurgie de précision.** (10 000 mots & fig.)

---

951 **656** .212
ull. de la Soc. des Ing. civils de France (mémoires), fascicule n^{os} 5 et 6, p. 228.
MARCHAND (M.). — L'**organisation du transport es marchandises** dans les chemins de fer. **Equipement es nœuds ferroviaires.** (5 000 mots & fig.)

1951 **656** .225 & **656** .261
ull. de la Soc. des Ing. civils de France (mémoires), fascicule n^{os} 5 et 6, p. 246.
GUIBERT (R.). — La **chaîne des transports et des anutentions** dans les chemins de fer. **Equipements rminaux.** (5 000 mots.)

1951 **62** (01
ull. de la Soc. des Ing. civils de France (mémoires), fascicule n^{os} 7 et 8, p. 390.
L'HERMITE (R.). — **Méthode d'auscultation des uvrages par détermination de la vitesse du son.** (5 200 ots & fig.)

Economie et Technique des Transports. (Zürich.)

1951 **621** .33
conomie et Technique des Transports, n^{os} 7-9, p. 76.
SEXAUER (O.). — Brèves considérations sur le **éveloppement de la traction électrique à fréquence ndustrielle** (50 Hz). (2 500 mots & fig.).

1951 **62** (01 & **669**
Economie et Technique des Transports, n^{os} 7-9, p. 86; n^{os}10-12, p. 113.
SUTTER (K.). — Erfahrungen im **Berechnen von Leitchtmetall-Konstruktionen.** (20 000 mots & fig.)

Génie Civil. (Paris.)

1952 **691** (492) & **725** .31 (492)
Génie Civil, n° 3317, 15 janvier, p. 32.
La **nouvelle gare en béton armé** d'Enschedé (Pays-Bas). (1 600 mots & fig.)

1952 **621** .331 (44)
Génie Civil, n° 3318, 1er février, p. 54.
Les **installations d'alimentation en énergie électrique** de la ligne de Saint-Gervais à Vallorcine. (800 mots & carte.)

1952 **621** .335 : **625** .42 (44)
Génie Civil, n° 3319, 15 février, p. 61.
La **nouvelle voiture motrice montée sur pneumatiques** du Chemin de fer Métropolitain de Paris. (1 500 mots & fig.)

1952 **62** (01 & **691**
Génie Civil, n° 3320, 1er mars, p. 89.
COÜARD (A.). — Les contradictions inadmissibles et onéreuses du **béton armé dans le bâtiment.** (2 000 mots & fig.).

1952 **625** .13 (44)
Génie Civil, n° 3320, 1er mars, p. 92.
Le **nouveau pont Pasteur** sur le Rhône, à Lyon. (1 800 mots & fig.)

Notre Métier — La Vie du Rail. (Paris.)

1951 **621** .33 (44)
Notre Métier, 26 novembre, p. 6.
Les **travaux d'électrification** de la gare de Lyon-Perrache. (1 000 mots & fig.)

1951 **656** .225 (44 + 65) & **656** .261 (44 + 65)
Notre Métier, 10 décembre, p. 4.
BILLY (Ch.). — Une liaison expérimentale Algérie-France par **containers.** (600 mots & fig.)

1952 **621** .335 (44)
Notre Métier, 7 janvier, p. 6.
La **locomotive prototype CC-6052.** (1 000 mots & fig.)

1952 **621** .33 (485)
La Vie du Rail, 21 janvier, p. 6; 28 janvier, p. 8.
WEYL (F.). — L'**électrification** des Chemins de fer Suédois. (2 500 mots & fig.)

1952 **621** .431.72 (65)
La Vie du Rail, 28 janvier, p. 6.
Les **autorails doubles** « De Dietrich » 640 CV à deux bogies moteurs destinés aux C.F.A. (800 mots & fig.)

1952 **656** .222.5 (44)
La Vie du Rail, 11 février, p. 8; 18 février, p. 5; 10 mars, p. 5.
LORRIOT (F.). — Le **service voyageurs** de la S.N.C.F. (3 000 mots & fig.)

RAMÉ. — **Caractéristiques commerciales du trafic voyageurs** de la S.N.C.F. (1 000 mots & fig.)

1952 **656** .232 (44)
La Vie du Rail, 10 mars, p. 8.
Voitures à places couchées pour transports spéciaux. (600 mots & fig.)

L'Ossature Métallique. (Bruxelles.)

1951 **624** (0
L'Ossature métallique, décembre, p. 571.
VERDEYEN (J.). — **Constructions métalliques légères.** (1 600 mots & fig.)

1951 **669** .1 & 69
L'Ossature métallique, décembre, p. 594.
BARTOCCI (A.). — **Acier ALS à haute résistance pour constructions légères.** (2 000 mots & fig.)

1951 **669** .1
L'Ossature métallique, décembre, p. 599.
FORDER (H.). — L'emploi de l'**acier inoxydable.** (2 200 mots & fig.)

1951 **621** .335 (44)
L'Ossature métallique, décembre, p. 608.
Locomotive électrique CC à grande vitesse. (1 600 mots & fig.)

Rail et Route. (Paris.)

1951 **625** .13 (42 + 44)
Rail et Route, août, p. 1; septembre, p. 1; octobre, p. 3; novembre, p. 3.
GÉNEAU (R.H.). — **Le Tunnel sous la Manche.** (18 000 mots & fig.)

1951 **625** .14 (01 & **656** .222.1
Rail et Route, septembre, p. 11.
DONIZEAU (A.). — De l'**influence des caractéristiques de la voie sur le confort aux grandes vitesses.** (7 000 mots & fig.)

1951 **621** .33 (436)
Rail et Route, octobre, p. 13; novembre, p. 15.
L'**électrification** des Chemins de fer fédéraux autrichiens. (3 000 mots, cartes & fig.)

1951/52 **625** .42 (460)
Rail et Route, décembre, p. 10; janvier, p. 13; février, p. 8.
HAMACHER HENSE (F.W.). — Les **Chemins de fer métropolitains espagnols** (Madrid et Barcelone). (6 000 mots & fig.)

1952 **625** .212 (44) & **625** .42 (44)
Rail et Route, janvier, p. 26.
GASTON. — Le **Métro sur pneumatiques.** (1 500 mots & fig.)

Revue de l'Aluminium. (Paris.)

1951 **621** .336 (4
Revue de l'Aluminium, octobre, p. 362.
ALBERT (L.). — Les très remarquables résultats d
fils de contact en aluminium-acier. Relevé des usur
par la R.A.T.P., après plus de 510 000 passages
frotteurs en acier. (1 000 mots & fig.)

1951 **625** .245 (44) & **669** .71 (4
Revue de l'Aluminium, décembre, p. 439.
REINHOLD (J.). — Une **rame en aluminium** po
le transport de l'alumine. (3 000 mots & fig.)

1951 **625** .24 (44) & **669** .71 (4
Revue de l'Aluminium, décembre, p. 447.
Histoire et progrès des **wagons français en alliag
légers.** (1 000 mots & fig.)

Revue Générale des Chemins de fer. (Paris.

1951 **621** .135 (
Revue générale des Chemins de fer, décembre, p. 7
LÉVI (R.). — **Erreurs faciles et vérités paradoxa
relatives au lacet.** (6 000 mots & fig.)

1951 **656** .211.7 (42 + 4
Revue générale des Chemins de fer, décembre, p. 7
FOLLÉA. — Le **ferry-boat** « Saint-Germain
(2 200 mots & fig.)

1951 **656** .222 (4
Revue générale des Chemins de fer, décembre, p. 7
BENOIT & GARIN. — Le **service en traction élé
trique** de la banlieue de Paris-Sud-Est pendant la pério
transitoire précédant la livraison du matériel aun
moteur spécialisé. (2 000 mots & fig.).

1951 **621** .133.1 (
Revue générale des Chemins de fer, décembre, p. 7
GILLIOT. — Les **locomotives à vapeur 2-3-0 chauffé
au mazout** des Chemins de fer de l'Etat égyptie
(4 000 mots & fig.)

1952 **625** .2
Revue générale des Chemins de fer, janvier, p. 1.
VERLOT (J.-B.) & FASOLI (M.). — Une nouve
organisation ferroviaire européenne : **la Société « Int
frigo** ». (5 000 mots & fig.)

1952 **625** .15 (4
Revue générale des Chemins de fer, janvier, p. 11.
LÉVI (R.) & MARTINET. — Les **appareils de v**
de la S.N.C.F. (7 000 mots & fig.)

1952 **625** .26 (4
Revue générale des Chemins de fer, janvier, p. 26.
TELLIER (J.) & MISEREY (J.). — L'**organisati**
d'un chantier par la méthode des temps élémentair
La **réparation des soufflets d'intercirculation** aux Ateli
de voitures du Landy. (3 000 mots & fig.)

1952 **656** .1 (4)
évue générale des Chemins de fer, janvier, p. 33.
GERMANO. — Les **lignes internationales d'autocars Europabus** ». (1 500 mots & carte.)

1952 **385** .62 & **385** .63
evue générale des Chemins de fer, janvier, p. 35.
DURAND (P.). — La révision des **Conventions nternationales concernant le transport des voyageurs, agages et marchandises.** (1 600 mots.)

1952 **385** (061.5
evue générale des Chemins de fer, février, p. 49.
HARRAND (G.). — L'**Union Internationale des hemins de fer à la fin de 1951.** (4 000 mots.)

1952 **621** .33 (44) & **625** .1 (44)
evue générale des Chemins de fer, février, p. 59.
JAY & BRASSEUR. — **Modifications d'installations ans la région lyonnaise en vue de l'électrification.** 6 000 mots & fig.)

1952 **656** .212.7 (44) & **656** .225 (44)
evue générale des Chemins de fer, février, p. 73.
CHARZAT. — L'**organisation des transports du égime accéléré.** La gare de Paris-Tolbiac depuis le 0 mai 1951. (2 500 mots & fig.)

1952 **621** .332 (44)
evue générale des Chemins de fer, février, p. 82.
Les **groupes transformateurs redresseurs à ignitrons** e la sous-station de Pont-Cardinet. (600 mots & fig.)

Revue Universelle des Mines. (Liège.)

1951 **669** .1
evue universelle des Mines, septembre, p. 281.
MICHEL (A.). — Quelques questions particulières ur les **traitements thermiques modernes des aciers.** 10 000 mots, tableaux & fig.)

In German.

Der Eisenbahningenieur. (Frankfurt a. Main.)

1951 **625** .113
Der Eisenbahningenieur, Oktober, S. 141.
SCHUHMACHER (W.). — Ermittlung der **Ausgleichschienen.** (1 500 Wörter & Abb.)

1951 **656** .221
Der Eisenbahningenieur, Oktober, S. 145; November, S. 157.
MORBITZER (F.). — **Zugkräfte und Widerstände** als Grundlage der Fahrzeitermittlung. (4 000 Wörter & Abb.)

1951 **625** .113 & **625** .151
Der Eisenbahningenieur, November, S. 160; Dezember, S. 180.
BÖSE (E.). — Die **Berechnung von Bogenweichenverbindungen mit Hilfe des Winkelbildverfahrens.** (3 000 Wörter, Tafeln & Abb.)

1951 **621** .116
Der Eisenbahningenieur, Dezember, S. 176.
HERBST (W.). — **Wärmewirtschaftliche Betrachtungen.** (1 800 Wörter & Abb.)

Eisenbahntechnische Rundschau. (Köln-Darmstadt.)

1952 **385** (072 (43) & **621** .131.3 (43)
Eisenbahntechnische Rundschau, Januar, S. 6 und Januar, S. 12.
PIRATH (C.). — Das **Forschungs- und Versuchswesen** auf dem Gebiet der Eisenbahntechnik an den deutschen Technischen Hochschulen. (3 500 Wörter & Abb.)
FLEMMING (F.). — Das **Forschungs- und Versuchswesen** der Deutschen Bundesbahn. (5 000 Wörter & Abb.)

1952 **656** .2
Eisenbahntechnische Rundschau, Januar, S. 21.
DILLI (G.). — « Ihre Majestät, die Toleranz ». Ein Vorstoss in das **Grenzgebiet der Leistungsfähigkeit der Eisenbahnen.** (5 000 Wörter & Abb.)

1952 **656** .25
Eisenbahntechnische Rundschau, Januar, S. 34.
RAAB (F.). — **Sicherheit.** (4 000 Wörter & Abb.)

1952 **625** .26 (43)
Eisenbahntechnische Rundschau, Januar, S. 42.
STAUFER (W.). — **Rationalisierung im Werkstättendienst** der Deutschen Bundesbahn. (4 000 Wörter & Abb.)

Elektrische Bahnen. (München.)

1951 **621** .335 (43)
Elektrische Bahnen, Dezember, S. 301.
MANZ (G.). — **Prüfmethoden und Entwicklungstendenzen bei den Hauptumspannern der elektrischen 16 2/3 Hz Lokomotiven** der Deutschen Bundesbahn. *(Fortsetzung.)* (8 000 Wörter & Abb.)

1951 **621** .335 (43)
Elektrische Bahnen, Dezember, S. 313.
KILB (E.). — **Neue elektrische Bo′Bo′-Lokomotiven Reihe E 10** für die Deutsche Bundesbahn. (1 500 Wörter & Abb.)

1951 **621** .33
Elektrische Bahnen, Dezember, S. 315.
PETERS (A.). — **50 Hz-Tagung in Annecy.** (1 300 Wörter & Abb.)

1952 **621** .33 (436)
Elektrische Bahnen, Januar, S. 1.
KOCI (A.). — Die **Elektrisierung** der Österreichischen Bundesbahnen. Derzeitiger Stand. (3 000 Wörter & Abb.)

1952 **621** .331 (43)
Elektrische Bahnen, Januar, S. 6.
EBELING (H.) & SCHMID (L.). — Das **neue Bahnstromunterwerk** Stuttgart-Münster und der Erweiterungsbau des Schaltpostens Stuttgart Hbf. (7 000 Wörter & Abb.)

1952 **621** .337
Elektrische Bahnen, Januar, S. 18.
BÄCHTIGER (A.). — Die **Pedalschaltung bei Schienenfahrzeugen, insbesonders Strassenbahnwagen.** (1 000 Wörter & Abb.)

1952 **621** .431.72 (73)
Elektrische Bahnen, Februar, S. 30.
SCHAEFER (H.H.). — Über die **Wirtschaftlichkeit der Dieselelektrischen Lokomotiven** in den U.S.A. (5 000 Wörter & Abb.)

1952 **621** .335 (47)
Elektrische Bahnen, Februar, S. 37.
HÜRLIMANN (W.). — **Elektrische Zugförderung** in Russland. (2 000 Wörter & Abb.)

Glasers Annalen. (Berlin.)

1951 **621** .133.2
Glasers Annalen, Oktober, S. 234; November, S. 257; Dezember, S. 293.
TROSS (A.). — Neue Erkenntnisse und Konstruktions-Richtlinien auf dem Gebiet des **Lokomotiv-Hinterkessels (Stehbolzen, Feuerbüchse, Stehkessel).** (30 000 Wörter & Abb.)

1951 **625** .2
Glasers Annalen, November, S. 274.
PETZOLD (W.). — Neue Wege für den **Leichtbau von Schienenfahrzeugen.** (4 000 Wörter & Abb.)

1951 **621** .132.8 (43)
Glasers Annalen, Dezember, S. 304.
HOECHERL (E.). — **Krauss-Maffei Hochdruckspeicherlokomotive.** (2 000 Wörter & Abb.)

1952 **625** .113 (73)
Glasers Annalen, Januar, S. 1.
FEYL (E.). — **Formeln für die Überhöhung, die Neigung der Überhöhungsrampen** und **die Übergangsbogenlängen** in den U.S.A. (500 Wörter & Abb.)

1952 **625** .143.3
Glasers Annalen, Januar, S. 2.
Dr. BÄSELER. — **Riffeln leicht zu beseitigen?** (3 000 Wörter & Abb.)

1952 **625** .142
Glasers Annalen, Januar, S. 5.
HOPPE (J.). — Die **Eisenbahnschwelle.** (1 000 Wörter & Abb.)

1952 **621** .138.2
Glasers Annalen, Januar, S. 7.
LILIENFELD (E.). — Belastungsschwankungen bei **Lokomotivbehandlungsanlagen.** (2 000 Wörter & Abb.)

Internationales Archiv für Verkehrswesen. (Frankfurt a. Main.)

1951 **385** .1
Intern. Archiv. f. Verkehrswesen, Nr 24, 2. Dezemberheft, S. 559.
BINDER (P.). — Die Anwendung betriebswirtschaftlicher Grundsätze als Voraussetzung für die **Finanzierung von Verkehrsbetrieben.** (4 000 Wörter.)

1951 **656** .211 (4
Intern. Archiv. f. Verkehrswesen, Nr 24, 2. Dezemberheft, S. 563.
LÜBBEKE (G.). — Für welche Verkehrsgröss sollen die **Personenverkehrsanlagen** der Deutsch Bundesbahn bemessen werden? (7 000 Wörter & Abb

1952 **656** .225 & **656** .2
Intern. Archiv. f. Verkehrswesen, Nr 1, 1. Januarhef S. 8.
Dr. BÄSELER. — Die **Zukunft des Grossbehälter** anders gesehen. (3 000 Wörter.)

1952 **656** .2
Intern. Archiv. f. Verkehrswesen, Nr 2, 2. Januarhef S. 25.
SCHMITZ (W.). — **Gleisbildstellwerke.** (7 000 Wört & Abb.)

1952 **65**
Intern. Archiv. f. Verkehrswesen, Nr 3, 1. Februarhef S. 49.
SCHLUMS (J.). — Der **Strassenverkehr in der Gesam verkehrsplanung.** (4 500 Wörter & Abb.)

1952 **656** .222
Intern. Archiv. f. Verkehrswesen. Nr 3, 1. Februarhef S. 58.
ROESER (O.). — **Zielsetzung der Personennahverkehr politik.** (6 000 Wörter.)

Signal und Draht. (Frankfurt a. Main.)

1951 **656** .2
Signal und Draht, September, S. 129.
LENTZ (G.). — Über die **Sicherheit der Signa schaltungen.** (5 000 Wörter.)

1951 **656** .2
Signal und Draht, September, S. 132.
GRANDRATH (F.). — **Elektrische Stellwerke f den beweglichen Einsatz.** (2 000 Wörter & Abb.)

1951 **656** .2
Signal und Draht, Oktober, S. 149; November, S. 17
LÜDDECKE (K.). — Abermals « **Zugeinwirkungen** Elektrotechnische Gesichtspunkte für die Beurteilu von **Schaltungen mit isolierten Schienen.** (9 000 Wört & Abb.)

1951 **656** .2
Signal und Draht, November, S. 171; Dezember, S. 18
JAINSKI (P.). — Die **Farbbewertung von Signa gläsern,** ein internationaler Vergleich. (4 500 Wört & Abb.)

1951 **656** .2
Signal und Draht, Dezember, S. 191.
SCHMITZ (W.). — **Signalschaltungen.** (2 000 Wörter

In English.

Bulletin - American Railway Engineering Association. (Chicago.)

951 **625** .15 (73)
etin - American Railway Engineering Association, December, p. 380.
ew developments in work equipment. (9 000 words.)

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951 **625** .17 (73)
letin - American Railway Engineering Association, December, p. 398.
ff-track ballast cleaning machinery. (7 000 words ig.)

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951 **621** (0 (73)
letin - American Railway Engineering Association, December, p. 423.
ffect of flat wheels on track and equipment. (10 000 ds & fig.)

The Engineer. (London.)

951 **621** .133.1 (42)
Engineer, Nov. 23, p. 664; Nov. 30, p. 685; Dec. 7, p. 723.
OXBEE COX (H.). — **Some fuel and power projects.** 00 words & fig.)

---

951 **621** .138.5 (42)
Engineer, Dec. 14, p. 765.
ocomotive inspection pit lighting. (200 words & fig.)

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951 **625** .242 (42)
Engineer, Dec. 21, p. 801.
Vagons for iron ore. (800 words & fig.)

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951 **625** .242 (43)
Engineer, Dec. 21, p. 815.
48-ton self-tipping railway wagon. (900 words & fig.)

---

951 **621** .431.72 (42)
Engineer, Dec. 28, p. 840.
ligh-speed high-power railway oil engine. (1 000 words ig.)

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952 **621** .132 1 (42), **621** .431.72 (42) & **621** .438 (42)
Engineer, Jan. 4, p. 2.
ritish locomotives in 1951. (3 600 words & fig.)

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952 **621** .438 (42)
Engineer, Jan. 11, p. 56; Jan. 18, p. 93.
las turbines in 1951. *(To be continued.)* (5 400 words ig.)

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952 **621** .335 (42)
Engineer, Jan. 11, p. 58; Jan. 18, p. 108.
ogie design on electric railways. (4 000 words.)

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952 **621** .335 (42)
Engineer, Jan. 18, p. 97.
mproved electrical equipment on S. R. multiple unit ns. (1 500 words & fig.)

Engineering. (London.)

1951 **621** .33
Engineering, Oct. 26, p. 521; Nov. 2, p. 545; Nov. 9, p. 583.
Single-phase electric traction at 50 cycles. (9 000 words & fig.)

1951 **62** (01 & 691
Engineering, Nov. 30, p. 677; Dec. 7, p. 707.
Prestressed-concrete statically-indeterminate structures. *(To be continued.)* (4 500 words & fig.)

1951 **621** .95 (42)
Engineering, Dec. 14, p. 748.
Double-headed **milling machine for locomotive frames.** (1 300 words & fig.)

1952 **621** .438 (73)
Engineering, Jan. 4, p. 18.
The American coal-burning gas-turbine locomotive. (600 words.)

1952 **621** .133.4 (42)
Engineering, Jan. 4, p. 29.
Automatic **smoke eliminator for works shunting locomotives.** (400 words & fig.)

Proceedings of The Institution of Civil Engineers (London.)

1952 **62** (06 (42)
Proceedings of the Institution of Civil Engineers, Part I, January, p. 7.
QUARTERMAINE (A.S.). — **Presidential address.** (19 pages with figures.)

1952 **65**
Proceedings of the Institution of Civil Engineers, Part II, February, p. 97.
Economy in railway engineering. (63 pages with tables & fig.)

1952 **624** & **691**
Proceedings of the Institution of Civil Engineers, Part I, Vol. I, No. 2, March, p. 125.
THOMAS (F.G.) & SHORT (A.). — A laboratory investigation of some **bridge-deck systems.** (63 pages with tables & fig.)

1952 **624** .7 (62)
Proceedings of the Institution of Civil Engineers, Part III, Vol. 1, No. 1, April, p. 101.
HYATT (K.E.) & MORLEY (G.W.). — The construction of Kafr el Zayat **railway bridge.** (40 pages with fig.)

The Journal of the Institute of Transport. (London.)

1952 **656** .225 & **656** .261
The Journal of the Institute of Transport, March, p. 339.
QUICK SMITH (G.W.). — **An historical analysis of the road-rail freight problem.** (6 000 words.)

The Journal of the Institution of Engineer, Australia. (Sydney.)

1952 **656** .2 (94)
The Journal of the Institution of Engineers, Australia, Jan.-Feb., p. 17.
FRASER (K.A.). — **Transportation and shipment of coal.** (5 400 words & fig.)

The Locomotive. (London.)

1951 **621** .132.1 (941)
The Locomotive, December 15, p. 184.
Western Australian Government Railways 4-8-2 locomotives. (1 200 words & fig.)

1952 **621** .438
The Locomotive, January 15, p. 6.
A coal fired gas turbine locomotive. (1 000 words & fig.)

1952 **625** .232 (42)
The Locomotive, January 15, p. 11.
British Railways sleeping cars. (1 200 words & fig.)

Mechanical Engineering. (New York.)

1952 **625** .28 (73)
Mechanical Engineering, April, p. 285.
Progress in railway mechanical engineering 1950-1951. (7 000 words & fig.)

1952 **656** .2 (460)
Mechanical Engineering, May, p. 375.
CLARK (ALLEN W.). — **Operating experience of the Talgo train.** (1 600 words.)

Modern Transport. (London.)

1951 **656** .28 (42)
Modern Transport, Nov. 24, p. 5.
Railway accident statistics for 1950. (1 300 words & tables.)

1951 **621** .33 (44)
Modern Transport, Dec. 1, p. 13.
Industrial frequency for electric traction. *(To be continued.)* (400 words & fig.)

1951 **625** .232 (71)
Modern Transport, Dec. 15, p. 9.
Underground cars for Toronto. (1 200 words & fig.)

1951 **385** (093
Modern Transport, Dec. 22, p. 3; Jan. 5, p. 12; Jan. 19, p. 11.
BEHREND (G.). — International Sleeping Car Company. — 75th Anniversary History of Wagons-Lits. (4 200 words & fig.)

1951 **625** .242 (
Modern Transport, Dec. 22, p. 5.
Consett iron ore traffic. — **B. R. building 56- wagons.** (1 200 words & fig.)

1952 **625** .4 (
Modern Transport, January 5, p. 3.
Underground trains on pneumatic tyres. (1 500 wo & fig.)

1952 **656** .1 (42) & **656** .2 (
Modern Transport, January 12, p. 3.
HARRISON (A.A.). — **Rail and road.** — Complem tary use for freight traffic. (1 500 words.)

1952 **621** .338 (
Modern Transport, January 12, p. 10.
Considerations in railway bogie design. Electric railw problems. (700 words & fig.)

1952 **621** .431.72 (
Modern Transport, January 19, p. 3; January 26, p.
TASCHINGER (O.). — **New German railbu** (3 000 words & fig.)

1952 **621** .33 (
Modern Transport, January 19, p. 12.
New Southern electric stock. (500 words & fig.)

The Oil Engine and Gas Turbine. (London.)

1952 **621** .431.72 (
The Oil Engine and Gas Turbine, January, p. 3
Paired railcars for Venezuela. (1 200 words & f

1952 **621** .431.72 (4
The Oil Engine and Gas Turbine, February, p. 3
British engines for Norwegian railcars. (1 200 wo & fig.)

1952 **621** .438 (
The Oil Engine and Gas Turbine, February, p. 4
Technical features of locomotive No. 18 100. (2 words & fig.)

1952 **621** .431.72 (
The Oil Engine and Gas Turbine, May, p. 4.
Ulster's seven 1 000 B.H.P. trains. (2 200 wo & fig.)

1952 **621** ..
The Oil Engine and Gas Turbine, May, p. 22.
World review of gas-turbine locomotives. (6 200 wo & fig.)

Railway Age. (New York.)

1951 **656** .212 (
Railway Age, December 17, p. 45.
New K.C.S. mechanical terminal has compl modern facilities. (2 400 words & fig.)

951 656 .212 (73)
lway Age, December 17, p. 50.
ew K.C.S. mechanical terminal improves work-
ıship and output. (1 600 words & fig.)

951 656 .23 (73)
lway Age, December 24, p. 25.
.T.C. pays its way on 103 miles of Baltimore and
o. (1 800 words & fig.)

951 625 .26 (73)
lway Age, December 24, p. 29.
atest in car-painting equipment. Pullman installs
ay booths on wheels. (1 400 words & fig.)

951 657 (73)
lway Age, December 24, p. 39.
AUMAN (R.F.). — **How to cut operating costs**
ugh better budgeting. (1 800 words & fig.)

951 656 .222.1 (73)
lway Age, December 24, p. 41.
TREETER (V.L.) & HARTENBERG (R.S.). —
motion around streamline trains. (1 200 words & fig.)

951 625 .24 (73)
lway Age, December 31, p. 37; January 7, p. 63.
IORGER (O.). — **If all freight cars had roller bearings.**
00 words & fig.)

952 656 .212 (73)
lway Age, January 7, p. 47.
Iodern freighthouse at Saint-Louis. (2 600 words
ig.)

952 656 .254 (73)
lway Age, January 21, p. 29.
adio reduces train delays. (1 400 words & fig.)

952 625 .17 (73)
lway Age, January 21, p. 39.
AKERS (J.B.). — **More effective materials and**
hods for maintenance work. (2 600 words & fig.)

Railway Engineering and Maintenance. (Chicago.)

951 625 .17 (73)
ilway Engineering and Maintenance, December,
p. 1107.
enovates entire ballast section. (2 000 words & fig.)

951 625 .134 (73)
ilway Engineering and Maintenance, December,
p. 1110.
ong turntable is eased into snug quarters. (1 400
rds & fig.)

951 625 .17 (73)
ilway Engineering and Maintenance, December,
p. 1115.
HINN (F.S.). — **Banding of ties on nickel plate**
uces cost of distribution. (1 800 words & fig.)

1952 625 .17 (73)
Railway Engineering and Maintenance, January, p. 50.
ANDERSON (E.L.). — **M./W. trends. Evolution of a new set-up on the Frisco.** (3 000 words & fig.)

Railway Gazette. (London.)

1951 625 .212 (44)
Railway Gazette, Nov. 30, p. 607.
Rectification of sharp flanges. (400 words & fig.)

1951 621 .132.1 (42)
Railway Gazette, Dec. 7, p. 632.
L.M.R. locomotives with improved British-Caprotti valve gear. (800 words & fig.)

1951 625 .215 (44)
Railway Gazette, Dec. 14, p. 660.
LEJEUNE. — **Improving the suspension and stability of running of bogies.** (700 words & fig.)

1951 656 .28 (42)
Railway Gazette, Dec. 21, p. 676.
Colonel Wilson's annual report. (3 600 words, tables & diagr.)

1951 625 .4 (44)
Railway Gazette, Dec. 21, p. 693.
Paris Metro rubber-tyre coach. (600 words & fig.)

1951 625 .242 (44)
Railway Gazette, Dec. 21, p. 695.
New wagons for carrying iron ore. (500 words & fig.)

1951 621 .335 (42)
Railway Gazette, Dec. 21, p. 710.
BOWLER (J.E.). — Some features of the **Rectifier locomotive.** (1 200 words & fig.)

1952 625 .143.3 (42)
Railway Gazette, Jan. 4, p. 10.
An analysis of rail-end failures. (500 words.)

1952 625 .23 (42)
Railway Gazette, Jan. 4, p. 12.
Locking mechanism for rolling stock windows. (300 words & fig.)

1952 625 .23 (6)
Railway Gazette, Jan. 4, p. 15.
Rolling stock for East Africa. (1 200 words & fig.)

1952 625 .232 (42)
Railway Gazette, Jan. 4, p. 18.
Air extractor for railway rolling stock. (500 words & fig.)

1952 621 .13 (42) & 625 .2 (42)
Railway Gazette, Jan. 11, p. 39.
McARD (Geo.W.). — **Ball and roller bearings in modern rolling stock.** (3 600 words & fig.)

1952 **621** .131.1 & **621** .335
Railway Gazette, Jan. 18, p. 69.
KOFFMAN (J.L.). — **Efficiency of steam and electric locomotives.** (2 000 words & fig.)

1952 **625** .242 (42)
Railway Gazette, Jan. 18, p. 73.
Special wagons for iron-ore traffic. (1 500 words & fig.)

1952 **621** .335 (42)
Railway Gazette, Jan. 25, p. 96.
Electrical equipment for Southern Region **multiple-unit trains.** (1 700 words & fig.)

1952 **621** .132.1 (42)
Railway Gazette, Jan. 25, p. 101.
British Railways, Standard Class « C » locomotive. (1 000 words & fig.)

Diesel Railway Traction. (London.)

1951 **621** .431.72 (42)
Diesel Railway Traction, July, p. 149.
The Fell locomotive of British Railways. (4 000 words & fig.)

1951 **621** .431.72 (42)
Diesel Railway Traction, August, p. 175.
Locomotives with hydraulic transmission. (2 200 words & fig.).

1951 **621** .431.72 (54)
Diesel Railway Traction, September, p. 199.
Diesel-electric locomotives for Ceylon. Designed for shunting duties and also freight operating. (2 000 words & fig.)

1951 **621** .431.72
Diesel Railway Traction, September, p. 203.
McARD (G.W.). — **Maintenance of oil-engine shunting locomotives.** Points to be considered to ensure long life of components and efficient operation. (2 300 words & fig.)

1951 **621** .431.72 (41)
Diesel Railway Traction, September, p. 207.
Standard coaches converted to railcars. (300 words & fig.)

Railway Magazine. (London.)

1952 **625** .24 (42)
Railway Magazine, January, p. 58.
British Railways standard wagons. (1 700 words & fig.)

1952 **625** .232 (42)
Railway Magazine, February, p. 85.
New third class sleeping cars. (1 000 words & fig.)

1952 **621** .132.1 (42)
Railway Magazine, March, p. 185.
The standard « Clan » class pacifics. (500 words & fig.)

Railway Mechanical and Electrical Engine (New York.)

1952 **625** .214 (
Railway Mechanical and Electrical Engineer, Janua p. 43.
HORGER (O.). — **Economics of freight-car ro bearings.** (4 600 words & fig.)

1952 **625** .236 (
Railway Mechanical and Electrical Engineer, Janua p. 60.
Pullman installs travelling spray booths. (1 800 wo & fig.)

1952 **625** .24 (
Railway Mechanical and Electrical Engineer, Februa p. 67.
HORGER (O.J.). — **Economics of freight-car ro bearings.** (3 200 words & tables.)

1952 **625** .
Railway Mechanical and Electrical Engineer, Februa p. 74.
GRISBAUM (L.D.). — **Waste packed journ** (4 200 words & tables.)

Railway Steel Topics. (Sheffield.)

1952 **625** .
Railway Steel Topics, Vol. 1, No. 2.
BULLEID (O.V.S.). — **Possible developments of steel tyre.** (900 words.)

The English Electric Journal. (Stafford.)

1952 **621** .431.72
The English Electric Journal, March, p. 3.
SMITH (J.M.). — **New rail traction engines « RK ».** (4 500 words & fig.)

University of Illinois Bulletin. (Urbana.)

1952 **62**
University of Illinois Bulletin, Series No. 396.
SIESS (C.P.), VIEST (T.M.) and NEWMA (N.M.). — **Studies of slab and beam highway brid** Part III : Small-scale tests of shear connectors composite T-beams. (133 pages illustrated.)

In Spanish.

Ferrocarriles y Tranvias. (Madrid.)

1951 **625** .232 (
Ferrocarriles y Tranvias, noviembre, p. 444.
LOPEZ JAMAR (L.). — Los **nuevos coches-ca que se construyen en España.** (1 500 palabras &

951 **385** .586 (460)
rocarriles y Tranvias, diciembre, p. 487.
IANI (M.). — **Tren-Escuela para la formación pro-nal de los Agentes del Departamento eléctrico.** 00 palabras & fig.)

951 **625** .213
rocarriles y Tranvias, diciembre, p. 500.
AFFITTE (C.). — Nota relativa a la **mejora de la ensión de los vehículos de mercancías.** (800 palabras ig.)

951 **625** .232
rocarriles y Tranvias, diciembre, p. 506.
RATS TOMAS (J.). — **Coches de 1ª clase transfor-les a seis literas.** (3 500 palabras & fig.)

Hormigón elastico. (Buenos Aires.)

951 **62** (01 & **669** .1
migón elastico, septiembre, p. 3.
IAGNEL (G.). — **Construcciones de acero pre-primido.** (4 000 palabras, cuadros & fig.)

951 **625** .142.4 (43)
migón elastico, octubre, p. 8; noviembre, p. 3.
IEIER (H.). — **Nuevo tipo de durmiente de hormigón tico** de los Ferrocarriles Alemanes. (9 000 palabras ig.)

951 **691**
migón elastico, octubre, p. 17; noviembre, p. 14; diciembre, p. 15.
OLOMEY (J.). — Contribución al estudio del **nigón precomprimido.** (10 000 palabras & fig.)

In Italian.

Alluminio. (Milano.)

951 **625** .2 (494) & **669** .71 (494)
minio, nº 5, novembre, p. 452.
npiego dell' alluminio nelle costruzioni ferrotranviarie particolare riguardo all' industria svizzera. (3 000 le & fig.)

952 **669** .71
minio, nº 1, marzo, p. 43.
AGLIALUNGA (L.). — Considerazioni su alcune **icazioni ferroviarie delle leghe leggere per cuscinetti.** 00 parole & fig.)

Giornale del Genio Civile. (Roma.)

951 **691**
rnale del Genio Civile, ottobre, p. 628.
UYON (Y.) — **Conférence à l'Université de Rome.** *on armé précontraint.)* (7 000 mots & fig.)

951 **624** (45) & **691** (45)
rnale del Genio Civile, ottobre, p. 658.
ERADINI (G.). — Esperienze su recenti **ponti ani di cemento armato.** *(Continuazione.)* (3 000 le & fig.)

1951 **624** .2 & **691**
Giornale del Genio Civile, ottobre, p. 670.
CASTELLUCCIO (Z.). — Sul **calcolo delle travi inflesse in cemento armato.** (6 000 parole & fig.)

1951 **691**
Giornale del Genio Civile, novembre-dicembre, p. 711.
Importanza e difficoltà della **meccanica dei calcestruzzi.** (Conferenza di E. FREYSSINET.) (8 000 parole.)

1951 **691**
Giornale del Genio Civile, novembre-dicembre, p. 733.
RINALDI (G.). — Un **nuovo tipo di ancoraggio terminale** per cavi di strutture precompresse. (600 parole & fig.)

Ingegneria ferroviaria. (Roma.)

1951 **621** .33
Ingegneria ferroviaria, dicembre, p. 863.
MÜLLER (A.E.) & CORBELLINI (F.). — Considerazioni sulla **trazione elettrica con corrente monofase a 50 Hz** derivata dalla rete industriale. (8 000 parole & fig.)

1951 **621** .33
Ingegneria ferroviaria, dicembre, p. 883.
LEUZZI (V.). — Le **giornate d'informazione sulla trazione monofase a frequenza industriale** indette ad Annecy dalla S.N.C.F. (5 000 parole.)

1952 **385** (09 (45)
Ingegneria ferroviaria, gennaio, p. 3.
di RAIMONDO (Dr. Ing. G.). — La **ricostruzione delle F.S.** alla fine del 1951. (10 000 parole, tavole & fig.)

1952 **625** .143.3
Ingegneria ferroviaria, gennaio, p. 33.
LA MAGNA (L.). — L'**usura ondulatoria delle rotaie.** (3 500 parole & fig.)

1952 **656** .256.3
Ingegneria ferroviaria, gennaio, p. 43.
RIGHI (R.). — Il **calcolo dei circuiti de binario muniti di connessioni induttive.** (2 000 parole & fig.)

Politica dei Trasporti. (Roma.)

1951 **388**
Politica dei Trasporti, nº 4, agosto, p. 115.
PATRASSI (A.). — **Tram, autobus o filobus** nei trasporti urbani. (4 000 parole.)

1951 **656** .1 (45)
Politica dei Trasporti, nº 5, settembre, p. 164.
SANTORO (F.). — Una situazione di compromesso in materia di **autolinee integrative e sostitutive delle ferrovie dello Stato.** (3 000 parole.)

1952 **625** .42 (45)
Politica dei Trasporti, nº 9, gennaio, p. 17.
VALLECCHI (U.). — Ragioni, scopi e caratteristiche costruttive della **Metropolitana di Milano.** (3 000 parole & fig.)

In Netherlands.

Spoor- en Tramwegen. (Utrecht.)

1951 **351** .812 .1 (42)
Spoor- en Tramwegen, Nr 16, 9 Augustus, p. 263; Nr 18, 6 September, p. 299; 4 October, p. 334; 15 November, p. 383.
VAN BALLEGOIJEN DE JONG (J. P. A.). — **Organisatie British Railways.** (8 000 woorden & fig.)

1951 **621** .33 (492)
Spoor- en Tramwegen, Nr 26, 27 December, p. 431.
VAN DER HOEK (E.). — **Electrificatie** van het baanvak Amersfoort-Zwolle. (1 000 woorden & fig.)

1951/52 **656** .225
Spoor- en Tramwegen, Nr 26, 27 December, p. 433; Nr 7, 3 April, p. 110; Nr 8, 17 April, p. 121.
PENTINGA (K.J.). — **Goederen vragen om bescherming.** (4 500 woorden & fig.)

1952 **385** .113 (492)
Spoor- en Tramwegen, Nr 1, 10 Januari, p. 1.
De **Nederlandsche Spoorwegen in 1951.** (2 000 woorden & fig.)

1952 **621** .33 (4)
Spoor- en Tramwegen, Nr 1, 10 Januari, p. 5; Nr 2, 24 Januari, p. 23.
KOSTER (J.P.). — **Electrische tractie met eenphase wisselstroom 50 perioden.** (5 000 woorden & fig.)

1952 **656** (42)
Spoor- en Tramwegen, Nr 2, 24 Januari, p. 19.
BETLEM (H.P.B.). — De **verkeerssituatie** in Groot-Brittannië. (2 500 woorden.)

1952 **385**
Spoor- en Tramwegen, Nr 3, 7 Februari, p. 35.
AGHINA (J.F.E.M.). — **De publieke opinie. Public relations in het spoorwegbedrijf.** (4 000 woorden.)

In Portuguese.

Tecnica. (Lisboa.)

1951 **624** (01 & **69** (01
Tecnica, nº 215, Outubro, p. 13; nº 216, Novembro, p. 79; nº 217, Dezembro, p. 143.
ROCHA (M.). — **Dimensionamento experimental das estruturas.** (22 000 palavras & fig.)

In Swedish = 439.71).

Spårväg och Buss. (Stockholm.)

1952 **625** .13 (485) = 439
Spårväg och Buss, No. 1, p. 3.
HILLBOM (B.). — **Slussen-Kungsgatan tunnel un construction.** (1 700 words.)

Teknisk Tidskrift. (Stockholm.)

1952 **621** .335 (485) = 439
Teknisk Tidskrift, No. 3, p. 55.
ASPENBERG (E.). — **Scheme for new type of tra** on the Swedish Railways. (2 700 words & fig.)

Nordisk Järnbanetidskrift. (Stockholm.)

1951 **656** .254 (489) = 439
Nordisk Järnbanetidskrift, No. 10, p. 298.
HANSEN (K.). — **Perfecting the sectional teleph installations** (selective system). Lecture given at Cop hagen, in September 1951, at the meeting of the Nordi Järnvägsmannasälskapet (Section E).
TOIVOLA (K.). — Finnish report (600 words.)
SAXEGAARD (L.). — Norwegian report. (1 000 wor
LINDEROTH (M.). — Swedish report. (900 words

1951 **656** .254 = 43
Nordisk Järnbanetidskrift, No. 10, p. 318.
SVENSSON (S.). — **Transmission trouble on railw telecommunication lines,** due to the lay-out of the li parallel to a tension of 380 kV. (Considerations submit to the meeting of the Nordiska Järnvägsmannas kapet (Section E), at Copenhagen, in September 19 (1 000 words.)

Svenska lokaltrafik föreningen, Meddelanden från... (Stockolm.)

1951 **656** (460 + 469) = 43
Svenska lokaltrafik föreningen, Meddelanden från No. 4, p. 181.
SAMUELSON (S.). — Some points on the **tra developments** at Lisbon and Madrid. (2 700 wo & fig.).

M. Weissenbruch & Co., Ltd., Printer to the King, 49, rue du Poinçon, Bruxelles.

MONTHLY BIBLIOGRAPHY OF RAILWAYS[1]

PUBLISHED UNDER THE SUPERVISION OF

P. GHILAIN,

General Secretary of the Permanent Commission of the International Railway Congress Association.

(SEPTEMBER 1952)

16. 385. (02]

I. — BOOKS.

In French.

1952 385
L'Année ferroviaire 1952.
Paris (6e), Editeurs Librairie Plon, 8, rue Garancière. 1 volume de 236 pages. (Prix : 660 fr. fr.)

1952 385 (09 (494)
C.F.F.-S.B.B.-F.F.S. 1902-1952. Numéro spécial (juin 52) du *Bulletin des C.F.F.* à l'occasion du cinquantenaire des C.F.F. suisses.
Berne, édité par le *Bulletin des C.F.F.* Une brochure (1 × 29 cm) de 40 pages avec de nombreuses illustrations et cartes.

1951 385 (09.3 (494)
Les Chemins de fer suisses après un siècle, 1847-1947. Tome II.
Neuchâtel, Delachaux & Niestlé, éditeurs. Un volume relié (19 × 26 cm) de 589 pages, illustré de nombreuses figures (en noir et en couleurs). (Prix : 32 fr. suisses.)

1952 625 .113
MAUNIN (J.), HOUDAILLE (L.) et BERNARD (A.). Tables trigonométriques et tables pour le tracé des courbes. *Nouvelle édition.*
Paris, Dunod, éditeur. Un volume (14 × 22 cm) de 264 pages, avec 24 figures. (Prix : 1 350 fr. fr.)

1952 691
MERRIN (A.).
Traité de béton armé.
Paris, Dunod, éditeur. Deux volumes (16 × 25 cm) de 320 pages avec 328 figures et de 304 pages avec 340 figures. (Prix : tome I, 2 600 fr. fr.; tome II, 2 750 fr. fr.)

1951 625 .232 (4)
MÉNON (P.).
La Compagnie Internationale des Wagons-Lits et des Grands Express européens. Numéro spécial de la revue *Rail et Route*, consacré à ladite Compagnie.
Paris, *Rail et Route*, 17, rue Bonaparte. Une brochure (18 × 25 cm) de 36 pages, ornée de cartes et de nombreuses illustrations.

1951 313 .385
UNION INTERNATIONALE DES CHEMINS DE FER.
Statistique internationale des Chemins de fer. Année 1950.
Paris (XVIIe), publiée par le Secrétariat Général de l'U.I.C., 10, rue de Prony. Une brochure (24 × 31 cm) de 160 pages, avec de très nombreux tableaux.

1952 624 .2
ZAYTZEFF (S.).
La méthode de Hardy Cross et ses simplifications.
Paris, Dunod, éditeur. Un volume (16 × 25 cm) de 88 pages, avec 36 figures. (Prix : broché, 560 fr. fr.)

In German.

1952 691
BÖHM (F.) & DRECHSEL (W.).
Das Betonieren bei Frost. 5. Auflage.
Berlin, Verlag von Wilhelm Ernst & Sohn. Ein Band (14 × 21 cm), 79 Seiten mit 93 Abbildungen. (Preis : DM. 7.50.)

1951 62 (01
FÖPPE (L.) & SONNTAG (G.).
Tafeln und Tabellen zur Festigkeitslehre.
München, Verlag R. Oldenbourg. 138 Seiten Text und 305 Abbildungen auf 88 Seiten. (Preis : geb., DM. 32.—.)

1951 62 (02
HÜTTE, Des Ingenieurs Taschenbuch. III. Band : **Bauingenieurwesen,** 3. Teil.
Berlin, Herausgeber Akademischer Verein Hütte, E. V., Verlag Wilhelm Ernst & Sohn. 463 Seiten mit zahlreichen Abbildungen. (Preis : DM. 15.—.)

1952 656 .212.5
Rangiertechnik. Heft 12. Im Anschluss an die 11 Sonderhefte der Studiengesellschaft für Rangiertechnik. Sonderausgabe der *Eisenbahntechnischen Rundschau*, März 1952.
Köln, Darmstadt, Carl Röhrig-Verlag oHG. 58 Seiten Din A 4, Kunstdruckpapier. (Preis : broschiert, DM. 8.—.)

(1) The numbers placed over the title of each book are those of the decimal classification proposed by the Railway Congress jointly with the Office Bibliographique International, of Brussels, (See « Bibliographical Decimal Classification as applied to Railway Science », by L. WEISSENBRUCH, in the number for November 1897, of the *Bulletin of the International Railway Congress* p. 1509.)

In English.

1952 385 (09
HAMILTON ELLIS.
The beauty of old trains.
London : George Allen & Unwin Ltd., Ruskin House, Museum Street, W.C. 1 (9 1/4 × 6 1/4 inches), 147 pp. Illustrated. (Price : 20s. net.)

1952 62
Kempe's engineer's year book, 1952.
London : Morgan Brothers (Publishers), Ltd., 28, Essex Street, W.C. 2. Volumes I and II in a case. 3 000 pages. (Price : £3.10.0.)

1952 656 .25 & 656 .28
POPKESS (A.).
Traffic control and road accident prevention.
London : Chapman and Hall Limited, 37, Essex Street, W.C. 2. (Price : 37s. 6d.)

1952 656 .23
SANDERSON (H.F.).
Railway commercial practice. Volume I : *General and passenger.* One volume 270 pages (8vo), illustrated.
London : Chapman & Hall, Ltd., Publishers, 37, Essex Street. (Price : 25s. net.)

1952 621 .132 & 625 .28
SIMPSON (C.R.H.) and BROWNE ROBERTS (F.).
Locomotives and their working, with a section on gas turbine, Diesel and electric locomotives.
London : Virtue and Company Limited, 24, Holborn, E.C. 1. Two volumes. (Price : 70s.)

1952 691
STEWART (D.A.).
The design and placing of high quality concrete.
London : E. & F.N. Spon, Ltd., 22, Henrietta Street, W.C. 2 (9 × 5 3/4 inches), 112 pages. Illustrated. (Price : 25s. net.)

1951 385 (09
STOCKER John.
Nigerian Railway Jubilee : 1901-1951.
Lagos, Nigeria : Published by the Public Relatio Office (8 × 6 1/2 inches), 36 pages. Illustrated. (Pric 6d.)

1950 385 (05 (9
The New Zealand Railway Observer. Volume
Journal of the New Zealand Railway & Locomoti Society. Honorary Secretary. Treasurer, P.O. B 1385, Wellington, C. 1, N.Z.

1952 625
WEBSTER (H.).
Railway motive power.
London : Hutchinson's Scientific and Techni Publications, Stratford-place, W. 1. (Price : 30s. ne

1952 621 .3
Welding practice. Volume I : **Welding Methods a Tests.** Edited by E. FUCHS and H. BRADLEY.
London : Butterworths Scientific Publications, Lt Bell Yard, Temple Bar, W.C. 2. (Price : 17s. 6d.)

In Italian.

1952 69 (
CATTINI (A.).
Scienza delle costruzioni. Esercizi di scienza de costruzioni.
Padova, « Cedam » editore. VIII-250 pagine, 113 gure.

1951 721
CESTELLI-GUIDI (C.).
Meccanica del terreno e stabilità delle fondazio 3ª *edizione totalmente rinnovata.*
Milano, Ulrico Hoepli, editore. 539 pagine, 380 ill strazioni, 22 tabelle. (Prezzo : L. 3 500.)

[016. 385. (05]

II. — PERIODICALS.

In French.

Annales des Travaux Publics de Belgique. (Bruxelles.)

1951/1952 624 .2
Annales des Travaux publics de Belgique, décembre, p. 981; février, p. 9.
DE BEER (E.E.) & KRASMANOVITCH (D.). — **Calcul de poutres reposant sur le sol.** Cas des charges uniformément réparties, des charges équidistantes et des charges excentrées. (10 000 mots, tableaux et fig.)

1952 624
Annales des Travaux publics de Belgique, février, p. 1
VANDEPITTE (D.). — Le problème de la **rigi fication des ponts suspendus.** (4 000 mots & fig.)

1952 691 (
Annales des Travaux publics de Belgique, avril, p. 2
DE GRAVE (A.). — La **production centrale du bé** aux Etats-Unis. (6 000 mots & fig.)

Bulletin des C.F.F. (Berne.)

1952 **625** .232 (494)
ulletin des C.F.F., janvier, p. 4.
URFER (E.). — Réorganisation des **trains sanitaires.** 000 mots & fig.)

1952 **656** .235 (494)
ulletin des C.F.F., janvier, p. 6.
DIRLEWANGER (H.). — La refonte et le relèvement s **tarifs de marchandises** du 1er janvier 1952. (1 600 ots & graphique.)

1952 **625** .25
ulletin des C.F.F., février, p. 26.
KELLER (A.). — Les **nouvelles prescriptions de** einage et leurs bases techniques *(suite)*. (1 000 mots fig.)

Bulletin des Transports Internationaux par Chemins de fer. (Berne.)

1952 **385** .63 & **656** .227
ull. des transp. intern. par Chemins de fer, janvier, p. 1.
XIe Session de la Commission d'experts, chargée de nir à jour le **règlement international concernant le** ansport **des matières dangereuses** (Annexe I à la I.M.). (2 000 mots.)

1952 **656** .223.2 & **656** .225
ull. des transp. intern. par Chemins de fer, février, p. 36.
1re Session statutaire des Commissions d'experts pour s **wagons de particuliers** et pour les **containers.** (1 500 ots.)

1952 **656** (4)
ull. des transp. intern. par Chemins de fer, février, p. 58.
Politique générale des transports en Europe. (800 ots.)

Bulletin de l'Union internationale des Chemins de fer. (Paris.)

1951 **656** .227
ulletin de l'Union intern. des Ch. de fer, novembre, p. 453.
OTTEN SOOSER (R.). — Le **transport des matières** ngereuses. (5 000 mots.)

1951 **656** .1 (4)
ulletin de l'Union intern. des Ch. de fer, novembre, p. 460.
DREYER (G.). — L'**Europabus** en 1951. (2 800 mots fig.)

1952 **385** (09 (43)
ulletin de l'Union intern. des Ch. de fer, janvier, p. 6.
La reconstruction du Chemin de fer Fédéral allemand. Note communiquée par la Deutsche Bundesbahn). 000 mots.)

Electricité. (Paris.)

1951 **621** .33
Electricité, décembre, p. 295.
PELOU (M.). — La **traction électrique par courant monophasé à 50 Hz.** (2 000 mots & fig.)

1952 **621** .3
Electricité, janvier, p. 1.
POLARD (J.). — La **protection thermique des moteurs.** (3 500 mots & fig.).

1952 **621** .335 (44)
Electricité, avril, p. 77.
GAIDE. — Les **locomotives et automotrices prototypes à courant monophasé** 20 000 V, 50 Hz de la S.N.C.F. (2 000 mots, tableaux & fig.)

L'Industrie des Voies ferrées et des Transports automobiles. (Paris.)

1952 **625** .212 (44) & **625** .42 (44)
L'Industrie des Voies ferrées et des Transp. automobiles, janvier, p. 4.
RUHLMANN. — La **voiture de Métropolitain équipée de pneumatiques.** (1 500 mots & fig.)

1952 **629** .113.62 (485)
L'Industrie des Voies ferrées et des Transp. automobiles, février, p. 22.
Les **trolleybus articulés** de Stockholm. (1 000 mots & fig.)

1952 **625** .2 : **625** .62 (493)
L'Industrie des Voies ferrées et des Transp. automobiles, mars, p. 30.
DEVIENNE. — Mise en service de **nouvelles motrices de tramway** à Bruxelles. (2 000 mots & fig.)

Génie Civil. (Paris.)

1952 **55**
Génie Civil, no 3321, 15 mars, p. 105.
LECOY (J.). — La **mesure des pressions dans les sols.** (2 000 mots & fig.)

1952 **691**
Génie Civil, no 3321, 15 mars, p. 107.
Progrès récents dans les études de **béton armé.** (1 500 mots & fig.)

1952 **721** .1
Génie Civil, no 3321, 15 mars, p. 111; no 3322, 1er avril, p. 128.
COÜARD (A.). — Les **pieux de fondations** et les sondages au cône. Vérifications expérimentales. Les sondages au cône en sols argileux. (3 000 mots & fig.)

1952 **625** .245
Génie Civil, no 3321, 15 mars, p. 112.
Wagons-trémies en alliages légers pour le transport de l'alumine. (600 mots & fig.)

1952 **625** .143.4
Génie Civil, nº 3321, 15 mars, p. 115.
L'**emploi de semelles de caoutchouc** dans es voies ferrées. (400 mots & fig.)

1952 **624** .63 & **691**
Génie Civil, nº 3322, 1er avril, p. 121.
LOSSIER (H.). — **Construction de ponts en béton précontraint par encorbellement** sans cintre inférieur. (2 000 mots & fig.)

1952 **624** .2 & **691**
Génie Civil, nº 3322, 1er avril, p. 132.
LEFAUDEUX (G.). — Les **effets du fluage du béton sur les grandes poutres** droites en béton armé; possibilité d'une surtension des armatures. (500 mots & fig.)

1952 **625** .13
Génie Civil, nº 3322, 1er avril, p. 132.
Nouvel appareil, système F. Bordes, pour relever le **gabarit des tunnels et galeries.** (1 000 mots & fig.)

L'Ossature métallique. (Bruxelles.)

1952 **625** .2 : **625** .62 (45)
L'Ossature métallique, janvier, p. 1.
SIBONA (E.). — **Transformation d'anciennes petites voitures de tramways à « grande capacité ».** (1 000 mots & fig.)

1952 **624** (06
L'Ossature métallique, janvier, p. 29.
ROISIN (V.). — **Compte rendu des travaux du Building Research Congress** (Londres, septembre 1951). (5 000 mots & fig.)

1952 **669** & **691**
L'Ossature métallique, janvier, p. 42.
BERMANE (D.). — **Protection contre la corrosion** et aciers faiblement alliés. (1 800 mots & fig.)

1952 **624** (436)
L'Ossature métallique, mars, p. 145.
FABER (L.). — **Reconstruction des ponts-routes** sur le Danube en Autriche. (2 000 mots & fig.).

1952 **624** .32 (45)
L'Ossature métallique, mars, p. 159.
Le **nouveau pont-rails et route** sur le Tessin à Sesto Calende (Italie). (700 mots & fig.)

1952 **656** .225 & **656** .261
L'Ossature métallique, avril, p. 203.
Les **containers repliables.** (1 000 mots & fig.)

1952 **721** .1
L'Ossature métallique, avril, p. 207.
VERDEYEN (J.) & ROISIN (V.). — **Nouvelle méthode de calcul des rideaux de palplanches métalliques et des blindages de tranchées profondes.** (6 000 mots & fig.)

Revue de l'Association française des Amis des Chemins de fer. (Paris.)

1951 **625** .21
Revue de l'Association franç. des Amis des Ch. de fe
novembre-décembre, p. 125.
BRUHAT (L.). — L'**évolution des bogies de voiture et la tranquillité de marche.** (7 000 mots & fig.)

1951 **625** .232 (44
Revue de l'Association franç. des Amis des Ch. de fe
novembre-décembre, p. 144.
Un essai : les **couchettes 3e classe** type « Charen taises ». (1 000 mots & fig.)

1952 **625** .14 (4–
Revue de l'Association franç. des Amis des Ch. de fe
janvier-février, p. 1.
MULOTTE (E.). — Les **progrès accomplis en Franc dans la technique de la voie** concernant l'entretien, l recherche des plus grandes vitesses, le plus grand confo du voyageur. (7 000 mots & fig.).

1952 **621** .335 (49
Revue de l'Association franç. des Amis des Ch. de fe
janvier-février, p. 21.
GACHE (A.). — La traction électrique sur la ligne du Gothard. Les **nouvelles Ae 6/6 des C.F.F.** (1 000 mot & fig.)

Revue Générale des Chemins de fer. (Paris.)

1952 **385** (061 (4
Revue générale des Chemins de fer, mars, p. 93.
LEMAIRE. — Le **Comité des Transports intérieurs de la Commission Economique pour l'Europe.** Principale activités dans le domaine ferroviaire. (5 000 mots.)

1952 **625** .231 (44
Revue générale des Chemins de fer, mars, p. 100.
DUFOUR. — Les **voitures métalliques d'omnibus e de banlieue** de la S.N.C.F. (5 000 mots & fig.)

1952 **656** .211 (44) & **656** .212 (44
Revue générale des Chemins de fer, mars, p. 110.
CAMUS & BEAUVIÈRE. — La **reconstruction d la gare de Longueau.** (2 000 mots & fig.)

1952 **625** .23 : **625** .42 (44
Revue générale des Chemins de fer, mars, p. 116.
Le **matériel articulé** du Réseau ferré de la Régi Autonome des Transports parisiens. (3 000 mots & fig.

1952 **385** (09 (73
Revue générale des Chemins de fer, mars, p. 132.
Les **Chemins de fer aux Etats-Unis** en 1949 et 1950 (2 500 mots, carte & fig.)

1952 **625** .245 (44
Revue générale des Chemins de fer, avril, p. 145.
DOUCET. — **Un wagon très allégé à grande capacit et déchargement automatique** pour le transport d l'alumine. (1 400 mots & fig.)

1952 **625 .14 (01 & 625 .2 (01**
évue générale des Chemins de fer, avril, p. 149.
BOUTELOUP. — Les **conditions géométriques du ntact rail-roue.** Le contour apparent du bandage et n inscription dans la voie. (8 000 mots & fig.)

1952 **625** .245 (44)
évue générale des Chemins de fer, avril, p. 165.
CRETIN & BERNARD. — Le **transport des voitures tomobiles au moyen de wagons à double plancher.** 500 mots & fig.)

1952 **621** .133.1 (44)
évue générale des Chemins de fer, avril, p. 172.
La part de la S.N.C.F. dans la consommation générale énergie de la France. (2 000 mots & tableaux.)

1952 **385** .63 (4)
évue générale des Chemins de fer, avril, p. 180.
DURAND (P.). — Les nouveaux règlements des **ansports internationaux par wagons de particuliers et r containers** (Conférence de Soleure, janvier 1952). 600 mots.)

La Technique Moderne. (Paris.)

1951 **625** .17
Technique Moderne, novembre, p. 485; décembre, p. 517.
GONON. — **L'entretien de la voie.** Evolution des éthodes dans le sens de l'économie. (7 000 mots & fig.)

1951 **621** .33 (44)
Technique Moderne, novembre, p. 492.
La traction électrique par courant monophasé à fréence industrielle. Journées d'information de la N.C.F. (1 600 mots.)

1952 **621** .33
Technique Moderne, janvier, p. 1; février, p. 40; avril, p. 109; mai, p. 136.
La recherche des économies en traction électrique.
GARREAU. — I. Les *systèmes d'électrification.* L'*expérimentation de la traction monophasée à* 50 *Hz* r la ligne d'Aix-les-Bains à La Roche-sur-Foron.
TESSIER (M.). — III. L'*évolution des locomotives ectriques* à grande vitesse. *L'adhérence totale.* (11 000 ots & fig.)

1952 **625** .28 (44)
Technique Moderne, janvier, p. 18.
Le matériel S.N.C.F. exposé aux Invalides en juin 950. **Locomotives électriques.** (1 000 mots & fig.)

Travaux. (Paris.)

1951 **624** .2
ravaux, novembre, p. 595; décembre, p. 647.
LAZARD (A.). — Plastification des **poutres à âme eine,** en acier doux, fléchies. (20 000 mots & fig.)

1952 **721** .1
Travaux, janvier, p. 21.
LESBORDES (R.). — **Détermination de la force portante de pieux** par des essais sur modèle réduit. (4 000 mots & fig.)

1952 **624**
Travaux, février, p. 57.
ESSLINGER (M.). — **Torsion des poutres en I renforcées par des nervures.** (4 000 mots & fig.)

1952 **624** (493) & **691** (493)
Travaux, février, p. 65.
CAPEL (J.). — **Trois ponts récents en béton précontraint.** (4 000 mots & fig.)

In German.

Der Eisenbahnbau. (Frankfurt-Main.)

1951 **625** .123
Der Eisenbahnbau, Dezember, S. 263.
FÖLSING (F.). — **Tiefenentwässerung** bei nassem Untergrund und wasserführenden Einschnitten. (1 200 Wörter & Abb.)

1951 **625** .14
Der Eisenbahnbau, Dezember, S. 276.
KEGEL (K.). — Die **Gleisabfangvorrichtung für die Planumsverbesserung** im Betriebe und ähnliche Arbeiten. (1 200 Wörter & Abb.)

Der Eisenbahningenieur. (Frankfurt a. Main.)

1952 **625** .212
Der Eisenbahningenieur, Januar, S. 6.
RÖHLING (F.). — Das **Radgleiten** und ein Vorschlag zu seiner Verhütung. (1 500 Wörter & Abb.)

1952 **625** .233 (43)
Der Eisenbahningenieur, Januar, S. 9.
TRAPP (H.). — Die **neue Leuchtstoffröhrenbeleuchtung** der Deutschen Bundesbahn. (1 000 Wörter & Abb.)

1952 **625** .113
Der Eisenbahningenieur, Januar, S. 10.
HELL (H.). — **Fehlerquellen bei der Prüfung von Gleisvermarkungen.** (1 000 Wörter.)

1952 **621** .13 (43)
Der Eisenbahningenieur, Februar, S. 25.
EICKE (W.). — **Einsatz von Güterzuglokomotiven de Baureihe 50 im Reisezugdienst.** (1 500 Wörter.

1952 **625** .151
Der Eisenbahningenieur, Februar, S. 28.
ENGBERDING (F.). — Die **Zwieschutzweiche** (2 500 Wörter & Abb.)

1952 **625** .162 (43) & **656** .254 (43)
Der Eisenbahningenieur, März, S. 37.
DOBMAIER (A.). — **Neue Technik an schienengleichen Wegübergängen — Haltlichttechnik.** (8 000 Wörter & Abb.

1952 **625** .143.3
Der Eisenbahningenieur, März, S. 58.
STÖCKER (E.). — Rund um den **Schienenkopf.** (1 000 Wörter & Abb.)

1952 **621** .31 (43)
Der Eisenbahningenieur, März, S. 62.
RUTKE (E.). — Schutzmassnahmen zur **Verhütung von Unfällen in Starkstromanlagen.** (3 000 Wörter & Abb.)

E.T.R. Eisenbahntechnische Rundschau. (Köln-Darmstadt.)

1952 **625** .11
Eisenbahntechnische Rundschau, März, S. 85; April, S. 138.
LÜBBEKE (G.). — **Grossflächige Eisenbahnplanung** im Raume Mannheim-Ludwigshafen-Heidelberg. (6 000 Wörter & Abb.)

1952 **625** .23 (43)
Eisenbahntechnische Rundschau, März, S. 92.
KÖRNER (R.). — Der **Stand des Personenwagenbaues** bei der Deutschen Bundesbahn. (6 000 Wörter & Abb.)

1952 **621** .436 (43)
Eisenbahntechnische Rundschau, März, S. 105.
ZINNER (K.). — Ein **neuer Dieselmotor** hohen thermischen Wirkungsgrades. (1 000 Wörter & Abb.)

1952 **656** .257 (43)
Eisenbahntechnische Rundschau, März, S. 108.
MEYER (W.). — **Signaltechnische Fernsteuerung** vom betrieblichen Standpunkt aus gesehen. (5 000 Wörter & Abb.)

Elektrische Bahnen. (München.)

1952 **621** .33
Elektrische Bahnen, März, S. 49.
KNÖRNSCHILD (M.). — Allgemein Wissenswertes über **Funkempfangsstörung durch elektrische Bahnen** mit Hinweisen zur Verminderung solcher Störungen. (3 000 Wörter & Abb.)

1952 **621** .33
Elektrische Bahnen, Februar, S. 25; März, S. 54.
HOFMANN (F.). — Die **elektrische Bahnstrecke als System von zwei gekoppelten Leitungen.** (12 000 Wörter & Abb.)

1952 **621** .33 (44)
Elektrische Bahnen, März, S. 67.
KAMMERER (V.). — Das **50 Hz Elektrisierungsprojekt** Valenciennes-Diedenhofen. (4 000 Wörter.)

1952 **621** .33 (81)
Elektrische Bahnen, April, S. 77.
HALLE (H.). — Die **Elektrisierung** der Brasilianischen Eisenbahnen. (5 000 Wörter & Abb.)

1952 **621** .332 (43)
Elektrische Bahnen, April, S. 84 & 93.
KAMMERER (A.). — Die Stromverteilung bei Kurzschlüssen in den Fahrleitungsanlagen für 16 2/3 Hz im Zusammenhang mit den **Schutzeinrichtungen der Fern- und Fahrleitungen** der Deutschen Bundesbahn. (4 000 Wörter & Abb.)
ADLER (K.). — **Länge der Schutzstrecken im Fahrleitungsnetz.** (2 000 Wörter & Abb.)

Glasers Annalen. (Berlin.)

1952 **621** .135 (0
Glasers Annalen, Februar, S. 23.
KNEULE (F.). — Analytische Berechnung der **Gegengewichte von Dampflokomotiven.** (2 000 Wörter & Abb.)

1952 **621** .133.3
Glasers Annalen, Februar, S. 27.
KINKELDEI (L.). — Die **inneren Korrosionen in den Kesseln der Dampflokomotiven.** (4 000 Wörter.)

1952 **621** .138.
Glasers Annalen, Februar, S. 31.
SCHMIDT (F.). — **Leistungssteigerung der Eisenbahn-Ausbesserungswerke** durch Vergleich (Normbetriebe) (2 000 Wörter & Abb.)

1952 **621** .133.
Glasers Annalen, März, S. 47.
KLIE (R.). — Die **Belastbarkeit des Lokomotivkessels** unter besonderer Berücksichtigung der Wärmeübertragung in der Feuerbüchse und des Verhältnisses Rohrheizfläche zu Feuerbüchsheizfläche. (8 000 Wörter & Abb.)

1952 **621** .431.72 (4
Glasers Annalen, April, S. 72.
LAMPE (C.) & PFLUG (E.). — Die **1 000-PS-Diesellokomotive** der Deutschen Bundesbahn für leichte Strecken- und schweren Rangierdienst. (8 000 Wörter & Abb.)

1952 **621** .133.7 (7
Glasers Annalen, April, S. 87.
KINKELDEI (L.). — Die **innere Speisewasseraufbereitung** bei den amerikanischen Dampflokomotiven nach dem Nalco-Verfahren. (3 000 Wörter & Abb.

Internationales Archiv für Verkehrswesen. (Frankfurt-Main.)

1952 **65**
Intern. Archiv. f. Verkehrswesen, Nr 4, 2. Februarheft S. 73.
ROGMANN (H.). — Der **Verkehr im Spiegelbild des Volkseinkommens und der privaten Ausgaben.** (2 50 Wörter & Abb.)

1952 **625 .2**
tern. Archiv. f. Verkehrswesen, Nr 5, 1. Märzheft, S. 97.
KREISSIG (E.). — Die **Bedeutung des Leichtbaus für e Gestaltung der Fahrzeuge** und die Entwicklung des rkehrswesens. (6 000 Wörter & Abb.)

1952 **385** (09 (52)
tern. Archiv. f. Verkehrswesen, Nr 6, 2. Märzheft, S. 129.
REITZEL (A.M.). — Die **Struktur der japanischen senbahnen.** (2 000 Wörter & Abb.)

1952 **629 .113.65**
tern. Archiv. f. Verkehrswesen, Nr 6, 2. Märzheft, S. 132.
SPIEGEL (W.). — **Transportleistungen moderner ektrofahrzeuge.** (1 500 Wörter & Abb.)

1952 **385 .11**
tern. Archiv. f. Verkehrswesen, Nr 7, 1. Aprilheft, S. 145.
OTTMANN (K.). — **Wirtschaftseinheit und Transport-oblem.** (2 000 Wörter.)

1952 **656 .226 (492)**
tern. Archiv. f. Verkehrswesen, Nr 7, 1. Aprilheft, S. 150.
THEOBALD (W.). — Vom **Stückgutverkehr** auf den atsbahnen der Niederlande. (2 000 Wörter.)

hweizerisches Archiv für Verkehrswissenschaft und Verkehrspolitik. (Zürich.)

1951 **656 .235 (494)**
nweizerisches Archiv für Verkehrswissenschaft u. Verkehrspolitik, Nr 4, S. 273.
DIRLEWANGER (H.). — Die **Gütertarifreform** der nweizerischen Eisenbahnen. (12 000 Wörter & 15 Tafeln.)

1951 **656 .1**
nweizerisches Archiv für Verkehrswissenschaft u. Verkehrspolitik, Nr 4, S. 327.
EIBBRAND (K.). — Die **anteiligen Fahrbahnkosten Strassenverkehrs.** Ein Beitrag zur Frage der Eigenrtschaftlichkeit. (6 000 Wörter.)

1951 **656 (42)**
nweizerisches Archiv für Verkehrswissenschaft u. Verkehrspolitik, Nr 4, S. 345.
SCHWABE (H.). — Die **Integration der Verkehrsttel in Grossbritannien** als Versuch einer verkehrsitischen Gesamtkonzeption. (6 000 Wörter & Abb.)

Verkehr. (Wien.)

1951 **656 .225 & 656 .261**
rkehr, Nr 43, 27. Oktober, S. 1338.
Was kann zur **Förderung des internationalen Conerverkehrs** geschehen? (3 000 Wörter.)

1951 **385 .63**
Verkehr, Nr 48, 1. Dezember, S. 1501.
BRÜLL (Dr. G.). — Zur **Revision des IÜG.** (1 000 Wörter.)

1952 **385 .15**
Verkehr, Nr 7, 16. Februar, S. 205.
BODENSTEIN (R.). — **Wirtschaftsverwaltung und Hoheitsverwaltung.** Ihre Abgrenzung, insbesondere im Bereiche der Eisenbahnverwaltung. (2 500 Wörter.)

1952 **656 .235 (436)**
Verkehr, Nr 9, 1. März, S. 273.
Aktuelle Probleme der Österreichischen Bundesbahnen. (1 200 Wörter).

1952 **385 (09 (436)**
Verkehr, Nr 12, 22. März, S. 377.
Neuordnung im österreichischen Verkehrswesen. 1. Mai: Wirksamkeitsbeginn der Gütertariferhöhung und der neuen Verkehrsgesetze. (2 800 Wörter.)

In English.

The Engineer. (London.)

1952 **621 .132.1 (68)**
The Engineer, January 18, p. 98.
2-8-2 locomotive for East African Railways. (600 words & fig.)

1952 **621 .33 (42)**
The Engineer, January 25, p. 142.
Electrical Engineering in 1951. (3 600 words & fig.)

1952 **621 .132.1 (42)**
The Engineer, January 25, p. 150.
British Railways Standard « Class 6 » locomotive. (600 words & fig.)

1952 **621 .438 (42)**
The Engineer, February 1, p. 177 ; February 15, p. 237 ; February 22, p. 283.
Gas turbine locomotive No. 18100. (4 800 words & fig.)

1952 **621 .33 (42)**
The Engineer, February 8, p. 207; February 15, p. 244 and February 22, p. 271.
Manchester-Sheffield-Wath electrification. (6 800 words & fig.)

1952 **625 .4 (45)**
The Engineer, February 8, p. 212; February 15, p. 257.
CARTY (C.). — **The Rome Metropolitan Railway.** (2 900 words & fig.)

1952 **621 .438 (73)**
The Engineer, February 15, p. 251; February 22, p. 269.
A coal burning gas turbine. (5 600 words & fig.).

Engineering. (London.)

1952 **62 (01**
Engineering, January 11, p. 57.
BAKER (J.F.). — **Shortcomings of structural analysis** *(to be continued).* (4 200 words & fig.)

1952 **621** .33 (42)
Engineering, January 11, p. 61.
BINGLEY (P.). — **Rectifier-motor variable-speed drives.** (3 200 words & fig.)

1952 **621** .132.1 (68)
Engineering, January 18, p. 73.
2-8-2 locomotive for East African Railways. (500 words & fig.)

1952 **621** .335 (42)
Engineering, January 18, p. 76.
Electrical equipment for Southern Region multiple-unit trains. (400 words & fig.)

1952 **621** .132.1 (42)
Engineering, January 25, p. 109.
Class 6 Standard 4-6-2 locomotive : British Railways. (1 600 words & fig.)

1952 **656** .1 & **656** .2
Engineering, January 18, p. 891; January 25, p. 121.
MARENDON (A.). — **Trailers and semi-trailers.** (5 600 words & fig.)

1952 **621** .438 (42)
Engineering, February 8, p. 163; February 15, p. 193.
3 000 H.P. gas-turbine electric locomotive; British Railways. (4 800 words & fig.)

Proceedings of the Institution of Civil Engineers. (London.)

1952 **625**
Proceedings of the Institution of Civil Engineers, June, p. 379.
Continental railway civil engineering practice. (29 pages, illustrated.)

Journal, The Permanent Way Institution. (London.)

1952 **625** .143.4
Journal, The Permanent Way Institution, April, p. 51.
BENNETT (L.J.) and DUDDRIDGE (L.F.). — **Flat bottom V. Bull head track.** (2 800 words.)

The Locomotive. (London.)

1952 **621** .33 (54) & **625** .23 (54)
The Locomotive, February 15, p. 23.
HAUT (F.J.G.). — **Light weight motor coaches** for India. (600 words & fig.)

1952 **625** .242 (42)
The Locomotive, February 15, p. 25.
B. R. 56-ton iron ore wagon. (700 words & fig.)

1952 **621** .438 (42)
The Locomotive, March 15, p. 34.
B. R. gas turbine locomotive No. 18100. (1 400 words & fig.)

1952 **621** .431.72 (481)
The Locomotive, March 15, p. 35.
BENNET-POWELL (J.A.). — **Express Diesel trains in Norway.** (1 800 words & fig.)

1952 **621** .133.4 (
The Locomotive, March 15, p. 43.
Automatic smoke elimination from shunting lo motives. (900 words & fig.)

Modern Transport. (London.)

1952 **621** .132.1 (
Modern Transport, January 26, p. 5.
New B. R. locomotive. (1 400 words & fig.)

1952 **385** (09
Modern Transport, February 2, p. 3.
GRIFFIN (A.). — **Railways in Rhodesia.** (1 400 wo & fig.)

1952 **385** (09 (
Modern Transport, February 2, p. 5.
Railways and Traders in South Africa. (1 600 wo & fig.)

1952 **621** .438 (
Modern Transport, February 2, p. 8; February 9, p. Febr. 16, p. 5.
British-built gas-turbine locomotive. (6 000 words fig.)

1952 **621** .33 (
Modern Transport, February 9, p. 3; February 16, p March 29, p. 5.
Wath to Dunford bridge electrification *(to be c tinued).* (3 600 words & fig.)

1952 **625** .
Modern Transport, February 16, p. 13.
Rail refrigerator vans. New Interfrigo units. (500 wo & fig.)

1952 **625** .4
Modern Transport, March 1, p. 3.
New Paris Metropolitain rolling stock. (1 800 wo & fig.)

1952 **385** (09 (
Modern Transport, March 15, p. 5.
EDE (A.J.). — **New Zealand Government Railw** Developments during 1951. (2 000 words & fig.)

1952 **385** (09 (
Modern Transport, March 15, p. 7.
HALL (A.G.). — **Western Australian Governm Railways.** New motive power : better road servi (1 800 words & fig.)

The Oil Engine. (London.)

1952 **621** .431.72
The Oil Engine, May, p. 4.
Ulster's seven 1 000 B.H.P. trains. (2 400 wo & fig.)

1952 **621**
The Oil Engine, May, p. 22.
World review of gas-turbine locomotives. (6 000 wo & fig.)

52 621 .431.72 (42)
Oil Engine, June, p. 48.
itish two-axle railcars demonstrated. (1 200 words g.)

52 621 .431.72 (42)
Oil Engine, June, p. 64.
ew locomotives for British Railways. (800 words g.)

Proceedings of the Institution of Electrical Engineers. (London.)

52 621 .33
Proceedings of the Institution of Electrical Engineers, Part II, June, p. 206.
iscussion on « The influence of rectifier harmonics railway system on the dielectric stability of 33 kV es. » (1 800 words & fig.)

Railway Age. (New York.)

52 625 .244 (73)
way Age, January 28, p. 29.
acific fruit express builds 2 000 refrigerator cars. 0 words & fig.)

52 621 .335 (73)
way Age, January 28, p. 36.
nnsylvania tests new type of series A.C. electric notives. (3 000 words & fig.)

52 656 .225 (73) & 656 .261 (73)
way Age, February 4, p. 81.
SBEE (R.J.). — P.E.I.'s safe transit program pays or carriers and shippers. (1 500 words & fig.)

52 625 .214 (73)
way Age, February, p. 84.
dvisory Committee for bearing makers states... case for plain bearing on freight cars. (3 000 words g.)

52 621 .335 (73)
way Age, February 11, p. 63.
HITTAKER (C.C.) and HUTCHISON (W.M.). — Pennsylvania receives two ignitron rectifier locoves. (2 400 words & fig.)

52 625 .22 (73)
way Age, February 25, p. 39.
R.R.'s new clearance car. Another step in railroad ernization. (1 600 words & fig.)

52 656 .222 (73)
way Age, February 18, p. 37.
peed control installed on Long Island. (2 800 words g.)

52 621 .335 (73)
way Age, March 10, p. 68.
MITH (S.V.). — The Pennsylvania's new electric ht locomotives. A comparison... (1 000 words g.)

Railway Engineering and Maintenance. (Chicago.)

1952 625 .143.5 (73)
Railway Engineering and Maintenance, April, p. 394.
Counters tunnel problem with long rails, rubber pads. (1 000 words & fig.)

The Railway Gazette. (London.)

1952 621 .438 (42)
The Railway Gazette, February 1, p. 125.
British-built gas-turbine locomotive. (3 200 words & fig.)

1952 656 .212.5 (42)
The Railway Gazette, February 8, p. 150.
Marshalling yard improvements in the Burntisland District, Scottish Region. (1 200 words & fig.)

1952 621 .33 (42) & 625 .164 (42)
The Railway Gazette, February 8, p. 157.
Preventing the formation of ice on conductor rails. (1 200 words & fig.)

1952 621 .33 (42)
The Railway Gazette, February 8, p. 152; February 15, p. 122; February 22, p. 207; February 29, p. 235.
First British main-line freight electrification. (6 800 words & fig.)

1952 621 .134.1 (42)
The Railway Gazette, February 15, p. 179.
POULTNEY (E.C.). — Hollow axles and crank pins. (3 000 words & fig.)

1952 621 .132.1 (42)
The Railway Gazette, February 29, p. 237.
POULTNEY (E.C.). — Proportions of British standard locomotives. (2 000 words & fig.)

1952 625 .233 (42)
The Railway Gazette, February 29, p. 240.
A simplified D.C.-system for fluorescent lighting. (1 000 words & fig.)

1952 656 .254 (492)
The Railway Gazette, March 7, p. 265.
Multiple-aspect speed signalling, Netherlands Railways. (2 200 words & fig.)

1952 621 .132 .1 (44)
The Railway Gazette, March 14, p. 293.
A new 4-6-4 type locomotive, French National Railways. (3 600 words & fig.)

1952 656 .254 (42)
The Railway Gazette, March 14, p. 297.
New signalbox at Stafford, L.M.R. (400 words & fig.)

1952 621 .335 (931)
The Railway Gazette, March 21, p. 320.
Articulated electric locomotives for New Zealand. (2 500 words & fig.)

1952 **656** .21 (68)
The Railway Gazette, March 28, p. 349.
New Johannesburg station, South African Railways. (1 400 words & fig.)

1952 **621** .438 (42)
The Railway Gazette, March 28, p. 354.
Gas-turbine locomotive tests on Hemerdon Bank. (400 words & fig.)

1952 **625** .143.3
The Railway Gazette, April 4, p. 375.
Gauging the useful life of rails. (500 words & fig.)

1952 **621** .135.2
The Railway Gazette, April 4, p. 377.
Flame-hardening of locomotives tyres. (700 words & fig.)

1952 **625** .245 (41)
The Railway Gazette, April 4, p. 378.
An 80-ton machinery wagon, C.I.E. (300 words & fig.)

Diesel Railway Traction. (London.)

1951 **621** .431.72 (42)
Diesel Railway Traction, November, p. 251.
Diesel-mechanical freight locomotives. (3 400 words & fig.)

1951 **625** .251 (73)
Diesel Railway Traction, December, p. 275.
Detection of wheel slip on locomotives. (900 words & fig.)

1951 **621** .431.72 (73)
Diesel Railway Traction, December, p. 278.
McARD (G.W.). — **High power Diesel shunters.** (2 400 words & fig.)

1952 **621** .431.72 (439)
Diesel Railway Traction, January, p. 15.
Six-car Diesel-electric main-line trains. (1 200 words & fig.)

1952 **625** .251
Diesel Railway Traction, January, p. 19.
Tests for wheel slip. (900 words & fig.)

Railway Mechanical and Electrical Engineer. (New York.)

1952 **621** .335 (42)
Railway Mechanical and Electrical Engineer, February, p. 89.
GOWANS (F.D.), WIDELL (B.A.) & BREDENBERG (A.). — **Series A.C. electric locomotives** with dynamic braking. (3 600 words & fig.)

1952 **625** .244 (73)
Railway Mechanical and Electrical Engineer, March, p. 66.
P.F.E. builds 40-ton refrigerator cars. (2 400 words & fig.)

1952 **621** .335 (7
Railway Mechanical and Electrical Engineer, Marc
p. 81.
WHITTAKER (C.C.) and HUTCHINSON (W.M
— **Rectifier locomotives in Pennsylvania freight servic**
(4 400 words & fig.)

In Spanish.

Boletin de la Asociación permanente del Congreso Panamericano de Ferrocarriles (Buenos Aires.)

1951/52 **656** .
Boletin de la Asoc. perman. del Congreso Panamer
de Ferrocarriles, noviembre-diciembre, p. 1
enero-febrero, p. 15.
GIL MONTERO (R.). — Cuatro lecciones sob
tarifas ferroviarias. (14 000 palabras, cuadros & fig

1952 **313** .385 (8
Boletin de la Asoc. perman. del Congreso Panamer
de Ferrocarriles, marzo-abril, p. 65.
Estadistica de los Ferrocarriles del Brasil. Perio
1946-1950. (600 palabras & cuadros.)

1952 **385** (
Boletin de la Asoc. perman. del Congreso Panamer
de Ferrocarriles, marzo-abril, p. 76.
PARMELEE (J.H.). — **Tendencias y perspectivas los ferrocarriles.** (2 000 palabras & cuadros.)

Ferrocarriles y Tranvias. (Madrid.)

1952 **625** .232 (4
Ferrocarriles y Tranvias, enero, p. 17.
HAMACHER (F.W.). — **Nuevas coches de dos pis**
de los Ferrocarriles Federales Alemanes. (2 000 palab
& fig.)

1952 **6**
Ferrocarriles y Tranvias, febrero, p. 41.
GIBERT Y SALINAS (A.). — La **telegrafia en**
ferrocarril. (3 500 palabras & fig.)

1952 **656** (4
Ferrocarriles y Tranvias, febrero, p. 55.
CUBILLO TORRES (F.). — La **coordinación de transportes terrestres.** Los sistemas de explotación
las empresas ferroviarias. (800 palabras.)

1952 **625**
Ferrocarriles y Tranvias, marzo, p. 83.
GUTTIERREZ SEGURA (J.F.). — **Cálculo de**
anchura de la caja de un coche de ferrocarril. (1
palabras & fig.)

1952 **625** .62 (
Ferrocarriles y Tranvias, marzo, p. 100.
HAMACHER (F.W.). — El **desarrollo del tran**
en Alemania. (1 500 palabras & fig.)

1952 621 .134.3
rrocarriles y Tranvias, abril, p. 119.
WEHRLE (M.). — Una **distribución para locotoras de vapor, accionada electricamente.** (2 500 abras & fig.)

1952 625 .112 (44 + 460) & 625 .617 (44 + 460)
rrocarriles y Tranvias, abril, p. 125.
La SEMAT y sus **vagones de ejes intercambiables.** 000 palabras & fig.)

1952 625 .62 (43)
rrocarriles y Tranvias, abril, p. 129.
REDER (G.). — **Tranvías alemanes de gran capacidad.** 0 palabras & fig.)

In Italian.

Giornale del Genio civile. (Roma.)

1952 62 (01
ornale del Genio civile, gennaio, p. 33.
BOLOGNA (G.). — Calcolo delle probabilità e efficiente **di sicurezza.** (2 000 parole & fig.)

1952 624 .2
ornale del Genio civile, gennaio, p. 38.
GIANGRECO (E.). — **Instabilità dinamica a torsione** r effetto di carichi pulsanti. (1 500 parole & fig.)

1952 691
ornale del Genio civile, febbraio, p. 86.
RINALDI (G.). — Rapporto sui lavori del **primo ngresso Internazionale del Cemento armato preimpresso** di Gand (Belgio). (5 000 parole & fig.)

1952 624 .2
ornale del Genio civile, febbraio, p. 97.
STAGNI (E.). — Applicazioni del metodo numerico : **nstabilità del corrente superiore di ponte metallico a avata reticolare aperta.** (4 500 parole & fig.)

Ingegneria ferroviaria. (Roma.)

1952 656 .1 (45)
gegneria ferroviaria, febbraio, p. 101.
VEZZANI (F.). — **Entità e costo degli autotrasporti** ll' anno 1951. (10 000 parole & tavole.)

1952 625 .23 (495)
gegneria ferroviaria, febbraio, p. 127.
SILVANO OREFICE (F.). — **Nuove carrozze** per le errovie Greche dello Stato. (1 500 parole & fig.)

1952 621 .33 (45)
gegneria ferroviaria, febbraio, p. 131.
DE NICOLA (P.). — **Elettrificazione** a c.c. 3 kV di nee secondarie comprese tra linee importanti già ettrificate con lo stesso sistema. (1 500 parole & fig.)

1952 656 .23 (45)
Ingegneria ferroviaria, febbraio, p. 150.
LANDRA (A.). — **L'andamento degli aumenti tariffari** sulle F.S. dall' anteguerra e la recente riforma. (3 000 parole.)

1952 621 .431.72 & 621 .431.73
Ingegneria ferroviaria, marzo, p. 183; aprile, p. 277.
DE GREGORIO (C.). — Sulle **curve di impiego del motore a combustione interna nell' autolocomozione stradale e ferroviaria,** con particolare riguardo all' influenza della temperatura. (10 000 parole & fig.)

1952 625 .2
Ingegneria ferroviaria, marzo, p. 195.
SAVOJA (A.). — **L'utilizzazione del materiale rotabile.** (3 000 parole & fig.)

1952 656 .232
Ingegneria ferroviaria, marzo, p. 201.
GUZZANTI (C.). — La conoscenza dei **costi unitari, medi, marginali e parziali,** nell' economia dei trasporti. (6 000 parole & fig.)

1952 656 .23 (0
Ingegneria ferroviaria, marzo, p. 212.
SANTORO (F.). — Recenti tendenze nella **politica delle tariffe ferroviarie.** (4 000 parole.)

1952 625 .234
Ingegneria ferroviaria, marzo, p. 217.
D'ARBELA (A.). — Il **riscaldamento elettrico** dei treni viaggiatori sulle linee esercite à trazione elettrica. (6 000 parole & fig.)

La Ricerca Scientifica. (Roma.)

1951 0 (06
La Ricerca Scientifica, ottobre, p. 1717, p. 1735 e p. 1757.
Il **Congresso Mondiale di Documentazione.** (Roma. 1952.)
BALBIS (B.). — Il **Congresso Mondiale di Documentazione e la documentazione in Italia.** (8 000 parole.)
VAN DER BRUGGHEN (W.). — Un **Indice universale dello scibile.** La Classification décimale universelle. (6 000 parole.)

In Netherlands.

Spoor- en Tramwegen. (Utrecht.)

1952 625 .24 (492)
Spoor- en Tramwegen, nr 4, 21 Februari, p. 57.
VAN GALEN (L.). — Het **wagenpark** der Nederlandsche Spoorwegen. (1 000 woorden & fig.)

1952 693
Spoor- en Tramwegen, nr 5, 6 Maart, p. 73.
VAN DEN BERG (J.). — Iets over **brandbestrijding bij onze bedrijven.** (3 000 woorden & fig.)

1952 **656** .254 (493)
Spoor- en Tramwegen, nr 5, 6 Maart, p. 82.
FLIPSE (J.L.). — De **centrale treindienstleiding** bij de Belgische Spoorwegen. (1 000 woorden & fig.)

1952 **621** .431.72 (492)
Spoor- en Tramwegen, nr 6, 20 Maart, p. 89; nr 7, 3 April, p. 107; nr 8, 17 April. p. 126.
KOSTER (J.P.). — **Nieuw Dieselelectrisch reizigersmaterieel** voor de N. S. (5 000 woorden & fig.)

1952 **656** .
Spoor- en Tramwegen, nr 8, 17 April, p. 130.
VAN GALEN (L.). — Het **lossen van stortgoede**
(1 000 woorden & fig.)

1952 **621** .335 : **625** .42
& **625** .212
Spoor- en Tramwegen, nr 9, 1 Mei, p. 141.
VAN ELDIK THIEME (H.C.A.). — Prototype een **motorrijtuig op luchtbanden** voor de Metro te Pa
(1 500 woorden & fig.)

M. Weissenbruch & Co., Ltd., Printer to the King, 49, rue du Poinçon, Bruxelles.

MONTHLY BIBLIOGRAPHY OF RAILWAYS[1]

PUBLISHED UNDER THE SUPERVISION OF

P. GHILAIN,

General Secretary of the Permanent Commission of the Internatioual Railway Congress Association.

(OCTOBER 1952)

016. 385. (02]

I. — BOOKS.

In French.

952 **691**

OT (E.).

éton armé.

aris, Eyrolles, éditeur. Un volume (17 × 25 cm) de pages, avec 192 figures. (Prix : 1 200 fr. fr.)

---

952 **385** (09 (494)

. F. F. — 50 ans de nationalisation. 50 ans de services lics.

erne, édité par le Secrétariat général des Chemins de fédéraux suisses. Une brochure (14.5 × 21 cm) de pages, abondamment illustrée.

---

952 **385** (08 (493)

MPAGNIE BELGE DE CHEMINS DE FER ET D'ENTREPRISES.

Rapports à l'assemblée générale ordinaire du 9 avril 2. Exercice 1951, 71e exercice social.

Bruxelles, édité par la Compagnie ci-dessus, 33, rue l'Industrie. Une brochure (22.5 × 29.5 cm) de pages.

---

952 **694**

OMENT (G.).

Les bois de construction.

Paris (5e), Editions Eyrolles, 61, boulevard Saint-rmain. Un volume (16.5 × 25 cm) de 246 pages, c 141 figures. (Prix : 1 700 fr. fr.)

---

951 **385** (08 (675)

FFICE D'EXPLOITATION DES TRANSPORTS COLONIAUX (OTRACO).

Rapport 1950.

Bruxelles, OTRACO, 101, avenue Louise. Une bro-ure (22 × 29 cm) de 56 pages, avec tableaux, gra-iques, cartes et photos hors texte.

1951 **69** (02

Pratique des Travaux. 1er volume : *Matériaux de construction.* 2e volume : *Procédés généraux de construction.*

Paris (5e), Editions Eyrolles, 61, boulevard Saint-Germain. *Ier volume* (16.5 × 25 cm) de 382 pages, 469 figures. (Prix : 660 fr. fr.). *2e volume* (16.5 × 25 cm) de 316 pages, 302 figures. (Prix : 790 fr. fr.)

1952 **625**

La Route-1952.

Paris (16e), Editions Science et Industrie, 6, avenue Pierre Ier de Serbie. Numéro spécial hors série de la revue mensuelle *Travaux*. Un volume (24 × 31 cm) de 168 pages, avec de nombreuses illustrations et carte hors texte. (Prix : France et Union française : 550 fr. fr.; étranger : 650 fr. fr.)

In German.

1951 **625** .42

BERGER (Dr Ing. R.).

Untergrundbahnen und ihre Einsatzgrenzen.

Berlin, Verlag Wilhelm Ernst u. Sohn. 99 Seiten mit 25 Abbildungen, 34 Tafeln und Anhang über ausgeführte U-Bahn-Netze. (Preis : geh. 9.50 D. M.)

1952 **625** .1 (02

Elsner's Taschenbuch für den bautechnischen Eisenbahndienst 1952.

Frankfurt a. M., Dr Arthur Tetzlaff-Verlag, Niddastrasse, 64. 1 Band mit 448 Seiten DIN A6. (Preis : in flexibl. Ganzleinen, 5 D. M. Vorzugspreis für Eisenbahndienststellen : 4.50 D. M.)

1952 **656** .23

MOORMANN (K.).

Leitfaden für den Verkehrsdienst. Heft 1 : **Das Tarifwesen.**

Frankfurt a. Main, Verlag Verkehrswissenschaftliche Lehrmittel-Gesellschaft. 119 Seiten. (Preis : 3.50 D. M.)

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(1) The numbers placed over the title of each book are those of the decimal classification proposed by the Railway Congress jointly with the Office Bibliographique International, of Brussels, (See « Bibliographical Decimal Classification as applied to Railway ence », by L. WEISSENBRUCH, in the number for November 1897, of the *Bulletin of the International Railway Congress*, p. 1509.)

1952 625 .1
RASCH (Dipl. Ing. A.).
Leitfaden für den Eisenbahnbau.
Köln-Braunsfeld, Verlagsgesellschaft Rudolf Müller, Maarweg, 130. 1 Band, 175 Seiten mit 5 Tafeln und 133 Abbildungen. (Preis : 7.50 D. M.)

In English.

1952 385 (061 .4 (73) & 656 .25 (73)
Association of American Railroads. Signal Section. Vol. XLIX, nº 1.
Reports to be presented at the Fifty-Fourth Annual Meeting, Quebec, Que., Canada. September 29-30 and October 1, 1952. Published by the Signal Section, A.A.R., 59 East Van Buren Street, Chicago 5, Ill.

1952 621 .131 (42)
British Railways. Mechanical and Electrical Engineer's Department. Bulletin nº 1. *Performance and efficiency tests with exhaust steam injector.* Western Region. « Hall » class 2-Cyl. 4-6-0 mixed traffic locomotive. (Price : 10 s. net). Nº 2 : *Performance and efficiency tests with exhaust steam injector.* Eastern and North Eastern Regions. « B1 » class 2-Cyl. 4-6-0 mixed traffic locomotive. (Price : 10 s. net). Nº 3 : *Performance and efficiency tests with live steam injector.* London Midland Region. Class 4.2-Cyl. 2-6-0- mixed traffic locomotive. (Price : 10 s. net). The Railway Executive, 222, Marylebone road, London, N. W. 1.

1952 691
BROESE VAN GROENOU (H.), RISCHEN (H.W.L.), and VAN DEN BERGE (J.).
Wood preservation during the last fifty years.
A. W. Sijthoff's Uitgeversmaatschappij N. V., Leiden, Holland. Cloth 6 1/2 × 9 3/4 in., 318 pp., illus., diagrams, tables. (Price : $ 6.)

1951 625 .143 (73)
CRAMER (R. E.) and JENSEN (R. S.).
Progress reports of investigation of railroad rails, joint bars and rail webs.
University of Illinois Bulletin, Vol. 48, nº 80, July 1951.
One brochure of 47 pages, published by the University of Illinois, Urbana. (Price : 25 cents.)

1952 385 (02
Directory of Railway Officials & Year Book, 1952-53.
London : Tothill Press Limited, 33 Tothill Street, Westminster, S. W. 1. One volume (8 1/2 × 5 1/2 in.) of 558 pages. (Price : 40 s.)

1952 691
FABER (O.).
Reinforced concrete.
London : E. and F. N. Spon, Ltd, 15, Bedford Street, W. C. 2. (Price : 30 s.)

1951 62 (01 &
HOGNESTAD.
A study of combined bending and axial load in reinfor concrete members.
University of Illinois Engineering Experiment Stati Bulletin Series, nº 399.
One brochure of 128 pages, published by the Univer of Illinois, Urbana. (Price : $ 1.)

1952 62
OLSEN (G. A.).
Strength of materials.
London : George Allen and Unwin, Limited, Rus House, 40, Museum Street, W. C. 1. (Price : 32 s. 6 d. n

1952 625
ROBERTS (J. A.).
Spring design and calculations.
Herbert Terry and Sons Ltd., Redditch, Engla Vth edition 1951. Cloth, 5 × 7 1/4 in., 125 pp., tab charts, diagrams, illustrated. (Price : 12s. 6d.)

1952 621 .
SIMPSON (C. H. R.) and BROWNE ROBERTS (F.)
Locomotives and their working.
2 volumes. London : Virtue and Cº. Ltd., Buchan Buildings, 24, Holborn, E. C. 1. (Price : £ 3.10.0d.)

1952
BARISH (Norman N.).
Systems analysis for effective administration.
Funk & Wagnalls Company, New York, N. Y. 19 in association with Modern Industry Magazine, N York. Cloth, 5 3/4 × 9 in., 101 figs., tables, inc x and 316 pp. (Price : $ 5.)

1952 62 (01 &
YEN (C. S.) and DOLAN (T. J.).
A critical review of the criteria for notch-sensitivity fatigue of metals.
University of Illinois Engineering Experiment Stati Bulletin Series nº 398.
One brochure of 55 pages, published by the Univers of Illinois Bulletin, Urbana. (Price : $ 0.50.)

In Italian.

1952 69
DONATO (L. F.).
Lezioni di costruzioni. Parte III : **Cemento armato.**
Pisa, C. Cursi, editore. Vol. I, 483 pagine, 279 fig 30 tabelle.

016. 385. (05]

II. — PERIODICALS.

In French.

Annales des Ponts et Chaussées. (Paris.)

952 **624** .2
nales des Ponts et Chaussées, janvier-février, p. 27.
OURBON. — Méthodes d'approximation pour le **ul des systèmes de poutres.** (7 000 mots, tableaux et

952 **624** .2
nales des Ponts et Chaussées, mars-avril, p. 127.
AQUOT. — Note sur la **torsion d'une poutre droite astrée à l'une de ses extrémités et libre à l'autre.**) mots & fig.)

952 **624** .2
nales des Ponts et Chaussées, mars-avril, p. 131.
SSLINGER (Melle M.) — **Torsion des poutres en I rbes.** (2 000 mots & fig.)

lletin de documentation S. C. E. T. A. (Paris.)

952 **656** (06
letin de Documentation S. C. E. T. A., janvier, p. 1; février, p. 1.
Organismes internationaux pour les transports terrestres. 00 mots.)

952 **656** .1 (4)
letin de Documentation S. C. E. T. A., mai, p. 4.
Nombre et importance des **entreprises de transport tier en Europe** (1950). (1 000 mots & tableaux.)

Bulletin technique de la Suisse Romande. (Lausanne.)

952 **62** (01
lletin technique de la Suisse Romande, 3 mai, p. 125; 17 mai, p. 137.
ASCHOUD (M.). — La **méthode de Walter Ritz.** n application à quelques problèmes élémentaires de **istance des matériaux.** (7 000 mots & fig.)

952 **621** .335 (494)
lletin technique de la Suisse Romande, 31 mai, p. 160.
Automotrice CFe 4/4 et wagon de commande BCt4ü des emins de fer fédéraux. (500 mots.)

Bulletin des transports internationaux par chemins de fer. (Berne.)

952 **385** .113 (489)
lletin des transports internationaux par chemins de fer, mars, p. 85.
Les **Chemins de fer de l'Etat danois** en 1950-1951. 000 mots.)

1952 **656** .227
Bulletin des transports internationaux par Chemins de fer, avril, p. 94.
MÉDARD (L.). — La sécurité du **transport par chemin de fer des matières radioactives.** (5 000 mots.)

1952 **385** .113 (485)
Bulletin des transports internationaux par Chemins de fer, avril, p. 118.
Les **Chemins de fer de Suède** en 1950. (1 500 mots.)

Bulletin de l'Union internationale des Chemins de fer. (Paris.)

1952 **385** (09 (3) & **385** .113 (3)
Bulletin de l'Union internationale des Chemins de fer, février, p. 24; mars, p. 44; mai, p. 127.
Les **Chemins de fer en 1951.** (Première, deuxième, troisième, quatrième, cinquième parties.) (21 000 mots & tableaux.)

1952 **385** (09 (73)
Bulletin de l'Union internationale des Chemins de fer, mars, p. 84.
PARMELEE (J. H.). — L'**activité des Chemins de fer américains** en 1951. (2 000 mots.)

Génie Civil. (Paris.)

1952 **62** (01
Génie civil, nº 3323, 15 avril, p. 154.
Le **contrôle des matériaux au moyen des ultra-sons.** (1 000 mots & fig.)

1952 **691**
Génie civil, nº 3324, 1er mai, p. 171.
COUARD (A.). — **Compromis permettant de tenir compte du béton tendu dans les calculs de béton armé.** (1 200 mots & fig.)

1952 **624** .63 (44)
Génie civil, nº 3326, 1er juin, p. 201.
LOSSIER (H.). — Le **nouveau pont en béton post-contraint réglable de Villeneuve-Saint-Georges,** sur la Seine, près de Paris. (2 000 mots & fig.)

1952 **621** .132 .1 (42)
Génie civil, nº 3326, 1er juin, p. 208.
CARTY (C.). — Les **locomotives** exposées au Festival de Grande-Bretagne (Londres, 1951). (1 500 mots & fig.)

1952 **691**
Génie civil, nº 3327, 15 juin, p. 224.
BOUÉ (J.) & FERRIER (J.). — **Procédés de revêtement et de chemisage des parois en béton.** (4 000 mots.)

Rail et Route. (Paris.)

1952 **621** .335 (492)
Rail et Route, février, p. 16.
Description sommaire des **rames quintuples électriques** (type 1940) des Chemins de fer Néerlandais. (1 000 mots & fig.)

1952 **385** (09 (55)
Rail et Route, mars, p. 3.
DESROSIERS (L.). — Les **Chemins de fer de l'Iran.** (3 000 mots & fig.)

1952 **621** .431 .72 (45)
Rail et Route, mai, p. 8.
MASINO. — **Nouveaux autorails** pour les Chemins de fer italiens. (1 200 mots & fig.)

1952 **656** .1 (44) & **656** .2 (44)
Rail et Route, juin, p. 12.
Un **aspect original des relations du Rail et de la Route.** La formule S. N. C. F. : « Train + 4 CV ». (1 200 mots & fig.)

Revue Générale des Chemins de fer. (Paris.)

1952 **621** .132 .8 & **621** .438
Revue générale des Chemins de fer, mai, p. 189.
PICARD (F.). — Une **nouvelle locomotive à turbine à gaz** avec générateur à pistons libres. (3 500 mots & fig.)

1952 **625** .24 (4)
Revue générale des Chemins de fer, mai, p. 200.
RIMBAUD (L.). — **Wagons standard U. I. C.** affectés au trafic international. (2 500 mots & fig.)

1952 **385** (09 (64)
Revue générale des Chemins de fer, mai, p. 207.
CARON. — Les **Chemins de fer du Maroc.** (2 600 mots & fig.)

1952 **621** .335 (44)
Revue générale des Chemins de fer, mai, p. 216.
NOUVION. — **Essais de la locomotive monophasée à 50 Hz CC. 6 051 Oerlikon** sur la ligne d'Aix-les-Bains à La-Roche-sur-Foron et sur la ligne allemande du Höllental. (3 000 mots & fig.)

1952 **625** .13 (436)
Revue générale des Chemins de fer, mai, p. 228.
La construction du nouveau **tunnel du Semmering.** (1 500 mots & fig.)

1952 **385** (09 (485)
Revue générale des Chemins de fer, mai, p. 232.
Les **Chemins de fer en Suède.** (1 200 mots & fig.)

1952 **621** .335
Revue générale des Chemins de fer, juin, p. 241.
JACQUEMIN. — Nouvelle conception mécanique pour une **locomotive électrique de vitesse.** (6 000 mots, tableau & fig.)

1952 **625** .172 (4
Revue générale des Chemins de fer, juin, p. 255.
PALMÉ. — Méthodes nouvelles d'**auscultation d rails.** (1 000 mots & fig.)

1952 **625** .2
Revue générale des Chemins de fer, juin, p. 258.
SCHAERRER. — Un **wagon à bogies, à déchargeme automatique par commande manuelle et commande pne matique.** (1 000 mots & fig.)

1952 **625** .143
Revue générale des Chemins de fer, juin, p. 262.
CHARTET. — L'**usure ondulatoire** « à granc **ondes** » **des rails.** Etude théorique de son développemen en relation avec les vibrations des essieux sur les rai (7 000 mots & fig.)

1952 **621** .132 .8 (73) & **621** .438 (7
Revue générale des Chemins de fer, juin, p. 277.
BRUN. — Une **locomotive américaine à turbine à g alimentée au charbon pulvérisé.** (800 mots & fig.)

1952 **621** .335 (49
Revue générale des Chemins de fer, juin, p. 279.
LE BERRIGAUD. — L'**automotrice électrique rapi prototype** de la S. N. C. B. (800 mots & fig.)

Revue générale de Mécanique. (Paris.)

1951 **621** .4
Revue générale de Mécanique, juillet, p. 207; octob p. 351.
SERRUYS (M.). — Principaux enseignements 1er Congrès international des **moteurs à combusti interne.** (Paris, 1951). (5 000 mots & fig.)

1952 **621** .135 .3 & **625** .2
Revue générale de Mécanique, janvier, p. 1.
LIGIER (A. G.). — Une technique essentielle p mettant un **meilleur emploi de l'acier dans la fabricat des ressorts. Application à la barre de torsion et au ress à boudin.** (4 000 mots & fig.)

Science et Technique. (Bruxelles.)

1951 **624** .2 & **6**
Science et Technique, n° 5/6, p. 111.
Les essais d'une **poutre de 50 m de portée en bét précontraint.** (3 000 mots & fig.)

1951 **656** .254 & **656** .2
Science et Technique, n° 9/10, p. 177; n° 11/12, p. 2
LAMALLE (U.). — La **commande centralisée de circulation** des trains conjuguée avec la banalisation voies. (5 000 mots & fig.)

1951 **621**
Science et Technique, n° 11/12, p. 227.
L'**exploitation des chemins de fer électriques.** (2 mots.)

La Technique Moderne. (Paris.)

952 **621** .335 : **625** .42 (44) & **625** .212 (44)
Technique Moderne, mars, p. 71.
'automotrice sur pneumatiques de la Régie Autonome Transports parisiens. (2 000 mots & fig.)

952 **621** .431 .72 (67)
Technique Moderne, juin, p. 166.
ocomotives Diesel-mécaniques de 300 ch à voie rique pour la Régie des Chemins de fer du Cameroun. 00 mots & fig.)

952 **625** .24 & **669** .71
Technique Moderne, juillet, p. 210.
Vagons en alliages légers. (2 000 mots & fig.)

Les Transports publics. (Lausanne.)

951 **656** .23 (494)
Transports publics, décembre, p. 3.
Dr BORN. — **Chemins de fer privés et relèvement aire des tarifs.** (1 600 mots & fig.)

952 **385** .15 (494)
Transports publics, janvier, p. 4.
Une **enquête sur les Chemins de fer privés suisses.** pages.)

952 **656** (494)
Transports publics, mars, p. 3.
Dr BORN. — **Libre collaboration rail-route** et chemins fer privés. (1 500 mots & fig.)

952 **656** (494)
Transports publics, mars, p. 10.
CHMID (A.). — La **coordination des transports** sous ngle du libéralisme. (1 500 mots.)

952 **656** (494)
Transports publics, juin, p. 3.
La libre collaboration entre le rail et la route. Questions principe. (1 500 mots.)

Travaux. (Paris.)

1951/52 **624** (44) & **691** (44)
avaux, juin, p. 375; juillet, p. 419; août, p. 462; septembre, p. 506; octobre, p. 568; novembre, p. 609; janvier, p. 10; février, p. 47; mars, p. 103; juillet, p. 319; septembre p. 425.
DUMAS (F.). — **L'évolution de la précontrainte du ton armé au cours de la reconstruction des ouvrages art du Nord et du Pas-de-Calais.** (50 000 mots, tableaux fig.)

1952 **691**
avaux, mars, p. 93; avril, p. 145; juillet, p. 331.
DURIEZ. — **Bétons et mortiers hydrocarbonés à aud et à froid.** Conception des bétons pour routes et rodromes et des bétons pour masques étanches. Règles atiques de composition; prévention et protection ntre les effets des ambiances agressives, des mouvements d'infrastructure et des charges dynamiques. 0 000 mots & fig.)

1952 **625** .13 (44)
Travaux, avril, p. 121.
VELITCHKOVITCH. — Les travaux de **reconstruction du pont Corneille** sur la Seine à Rouen. (5 000 mots & fig.)

1952 **624** .8 (44)
Travaux, avril, p. 137.
DESCHÊNES (H.). — Un **exemple d'application des alliages légers à la construction des ponts.** Le pont basculant nº 8 du port du Havre. (4 000 mots, tableaux & fig.)

La Vie du Rail. (Paris.)

1952 **656** .254 (44)
La Vie du Rail, 17 mars, p. 5.
L'équipement radio-électrique à la S. N. C. F. (1 200 mots & fig.)

1952 **625** .28 (497 .1)
La Vie du Rail, 17 mars, p. 10.
La **Traction** en Yougoslavie. (1 300 mots & fig.)

1952 **385**
La Vie du Rail, 24 mars, p. 6.
SURLEAU (F.). — **Le rail.** (2 000 mots & fig.)

1952 **625** .258 & **656** .212 .5
La Vie du Rail, 31 mars, p. 3; 7 avril, p. 4; 14 avril, p. 4.
LECOMTE. — **Freins de voie.** (2 600 mots & fig.)

1952 **625** .23 (44)
La Vie du Rail, 7 avril, p. 3.
Modernisation des voitures à essieux de la Région du Sud-Est. (500 mots & fig.)

1952 **385** (09 (56)
La Vie du Rail, 7 avril, p. 10.
Les **Chemins de fer Israéliens.** (1 000 mots & fig.)

In German.

Der Eisenbahningenieur. (Frankfurt a. Main.)

1952 **656**
Des Eisenbahningenieur, April, S. 80.
LINDER (R.). — **Vergleich der Personenfahrzeuge** im Schienen-, Strassen- und Luftverkehr. (2 000 Wörter & Tafel.)

1952 **625** .113 & **625** .151
Der Eisenbahningenieur, April, S. 84.
BÖSE (E.). — Neue Erkenntnisse für die **Gestaltung von Bogenweichenverbindungen hinsichtlich der Krümmung.** (1 500 Wörter & Abb.)

1952 **656** .211 (43)
Der Eisenbahningenieur, Mai, S. 91.
HARTMANN (M.). — Der **Wiederaufbau des Hauptbahnhofes München** nach 1945. (1 500 Wörter & Abb.)

1952 **625 .18**
Der Eisenbahningenieur, Mai, S. 94.
RIEGER (R.). — Die wirtschaftliche Bedeutung der **Aufarbeitung von Oberbaustoffen.** (2 000 Wörter.)

1952 **621 .33**
Der Eisenbahningenieur, Mai, S. 97.
HAUSMANN (L.). — Die **elektrische Zugförderung.** (1 500 Wörter & Abb.)

1952 **625 .113**
Der Eisenbahningenieur, Mai, S. 104.
WARNICK (A.). — Einfache Berichtigung der kubischen Parabel beim **Übergangsbogen.** (2 000 Wörter, Tafeln & Abb.)

1952 **625 .142 .4**
Der Eisenbahningenieur, Juni, S. 113.
NEUMANN (B.). — Der **Wellendübel in der Betonschwelle** und die Spannungshaltung bei der Schienenbefestigung. (3 000 Wörter & Abb.)

1952 **625 .27 (43)**
Der Eisenbahningenieur, Juni, S. 122.
SCHEIDERER (H.). — Die **Überwachung des Stoffverbrauchs bei der Fahrzeugausbesserung** der Deutschen Bundesbahn. (1 500 Wörter & Tabellen.)

1952 **621 .133 (01**
Der Eisenbahningenieur, Juni, S. 127.
NIENSTEDT. — Betrachtungen über **Dampfentwicklung an Lokomotiven.** (1 500 Wörter & Abb.)

Elektrische Bahnen. (München.)

1952 **621 .33**
Elektrische Bahnen, Mai, S. 101; Juni, S. 133.
ROSINUS (F.). — Die **elektrischen Schutzeinrichtungen und Relais im 16 2/3 Hz-Bahnstromnetz.** (6 000 Wörter & Abb.)

1952 **621 .31**
Elektrische Bahnen, Mai, S. 106.
REMMELE (G.). — Das **Ignitron.** (2 000 Wörter & Abb.)

1952 **621 .31**
Elektrische Bahnen, Mai, S. 111.
KILB (E.). — **Rückwirkungen von Bahnumrichtern auf die Drehstromnetze.** (3 500 Wörter & Abb.)

1952 **621 .332**
Elektrische Bahnen, Mai, S. 115.
HEIDE (E.). — **Wechselbeziehungen zwischen Fahrleitung und Stromabnehmer** bei Strassenbahnen und Werkbahnen. (1 200 Wörter & Abb.)

1952 **621 .335 (43)**
Elektrische Bahnen, Juni, S. 125; Juli, S. 158.
LUDWIG (E.). — Der **50 Hz-Doppeltriebwagen** der Siemens-Schuckertwerke A. G. für die Höllentalbahn. (8 000 Wörter & Abb.)

1952 **621 .**
Elektrische Bahnen, Juni, S. 138.
HEGNAUER (W.). — Untersuchung der **Ank bewegungen eines Fahrmotors bei gefedertem Antri** (2 000 Wörter & Abb.)

1952 **621 .335 (4**
Elektrische Bahnen, Juni, S. 142.
STETZA (G.). — **Neue elektrische Triebwagenzü** der Schnellbahn Athen-Piräus (Griechenland). (Wörter & Abb.)

E. T. R. Eisenbahntechnische Rundschau. (Köln-Darmstadt.)

1952 **388 (**
Eisenbahntechnische Rundschau, April, S. 117.
SCHMEISSER (G.). — Der **Städteschnellverkehr seine Gestaltung** — am Beispiel der Eisenbahndirekti Stuttgart erläutert. (6 000 Wörter & Abb.)

1952 **625 .**
Eisenbahntechnische Rundschau, April, S. 130.
DIEHL (A.). — Die **Lebensdauer von Eisenba schwellen.** (5 000 Wörter & Abb.)

1952 **656 .211 (**
Eisenbahntechnische Rundschau, Mai, S. 149.
SPRÖGGEL (R.). — Wiederaufbau und Neubau v **Eisenbahn-Empfangsgebäuden.** (5 000 Wörter & Abb.)

1952 **625 .2**
Eisenbahntechnische Rundschau, Mai, S. 162.
KREISSIG (E.). — Der **Pufferstoss.** (2 500 Wör & Abb.)

1952 **625 .26 (**
Eisenbahntechnische Rundschau, Mai, S. 166.
GRAMSCH (M.). — **Schadanfälligkeit der Güt wagen.** (4 000 Wörter, Tafeln & Abb.)

Glasers Annalen. (Berlin.)

1952 **625 .23 (47) & 625 .24 (**
Glasers Annalen, Juni, S. 123.
HÜRLIMANN (W.). — Das **Wagenmaterial** russischen Eisenbahnen. (2 000 Wörter, Tabellen & Abb

---

1952 **621 .1**
Glasers Annalen, Juni, S. 128.
Dr Ing. MEINEKE. — **Führende und fehlerha Lokomotivkonstruktionen.** (1 500 Wörter.)

1952 **621 .431 .72 (4**
Glasers Annalen, Juli, S. 145.
HAMACHER (F. W.). — Der **Triebwagenverkehr** a dem Netz der spanischen National-Eisenbahn-Gese schaft (R. E. N. F. E.). (3 000 Wörter & Abb.)

1952 **621 .133**
Glasers Annalen, Juli, S. 150.
TROSS (A.). — Mathematisch-graphische Metho für die **Berechnung fester Stehbolzen mit verjüngt Schaft** bei allen vorkommenden Beanspruchungsfäll (6 000 Wörter & Abb.)

952 **621** .132 .8
sers Annalen, Juli, S. 159.
INKELDEI (L.). — Die Verwendung des Hoch-
ck-Dampfspeichers für eine **feuerlose Lokomotive.**
00 Wörter & Abb.)

952 **621** .131
sers Annalen, Juli, S. 165.
CKHARDT (F. W.). — Zur Frage des **Eigenwider-**
ndes von Dampflokomotiven. (1 000 Wörter & Abb.)

Internationales Archiv für Verkehrswesen. (Mainz.)

952 **656** (43)
ern. Archiv. f. Verkehrswesen, nr 8, 2. Aprilheft, S. 171.
ROGMANN (H.). — Zur **Verkehrskoordinierung.**
)00 Wörter.)

952 **656** (73)
ern. Archiv. f. Verkehrswesen, nr 8, 2. Aprilheft, S. 178.
WOLFF (K.). — Das **amerikanische Verkehrswesen.**
drücke von einer Studienreise. (4 000 Wörter.)

952 **621** .131 .1
ern. Archiv. f. Verkehrswesen, nr 9, 1. Maiheft, S. 193.
KOTHER (H.). — **Energieverbrauch und Energie-**
tschaft im Strassen- und Schienenverkehr. (10 000
örter & Abb.)

952 **625** .111
ern. Archiv. f. Verkehrswesen, nr 9, 1. Maiheft, S. 206.
ČABRIAN (M.). — Die **heutigen Möglichkeiten des**
riantenvergleiches der Eisenbahnlinien. (2 500 Wörter
Abb.)

952 **385**
ern. Archiv. f. Verkehrswesen, nr 10, 2. Maiheft, S. 226.
BÄSELER (W.). — Die **automatische Eisenbahn.**
500 Wörter.)

952 **625** .28
ern. Archiv. f. Verkehrswesen, nr 11, 1. Juniheft,
S. 241.
CHAUSSETTE (G.). — **Lokomotive oder Triebwagen?**
000 Wörter.)

952 **656** .225 & **656** .261
ern. Archiv. f. Verkehrswesen, nr 11, 1. Juniheft,
S. 248.
UNVERZAGT (W.). — Zur **Internationalen Container-**
sstellung in Lüttich. (3 000 Wörter & Abb.)

Signal und Draht. (Frankfurt-Main.)

952 **656** .25 (43)
gnal und Draht, Januar, S. 1.
DOBMAIER (A.). — **Fortschritte im Signal- und**
rnmeldewesen, 1951-1952. (20 000 Wörter & Tafeln.)

1952 **656** .25
Signal und Draht, Februar, S. 21.
LÜDERITZ (G.). — Änderung der signaltechnischen Grundsätze im Zusammenhang mit der Einführung **neuer Signaltechnik.** (10 000 Wörter.)

1952 **656** .257
Signal und Draht, März, S. 41; April, S. 65.
SCHMITZ (W.). — Das **Entwerfen von Schaltungen.** (4 500 Wörter & Abb.)

1952 **656** .256
Signal und Draht, März, S. 47.
KUNZE (H.). — Zur Wahl der Frequenz für **Gleis-stromkreise.** (3 000 Wörter & Abb.)

1952 **656** .256 .3
Signal und Draht, April, S. 57; Mai, S. 73.
HOFMANN (F.). — **Zweidraht-Wechselstrom-Block-schaltungen mit Induktions- und Gegenblockungsschutz.** (5 000 Wörter & Abb.)

In English.

The Engineer. (London.)

1952 **691**
The Engineer, February 15, p. 240.
KIRKHAM (R. H. H.). — **Experiments on the vibration of freshly placed concrete.** (3 600 words & fig.)

1952 **621** .335 (48)
The Engineer, February 29, p. 304.
1800 H. P. articulated electric locomotives for New Zealand. (3 200 words & fig.)

1952 **621** .431 .72 (87)
The Engineer, March 7, p. 353.
Articulated Diesel-mechanical railcars for Venezuela. (2 200 words & fig.)

1952 **656** .222 (42)
The Engineer, April 4, p. 458; July 18, p. 77.
NOCK (O. S.). — Present-day **locomotive working** in Great-Britain. (4 800 words & fig.)

1952 **656** .254 (42)
The Engineer, April 4, p. 477.
Liverpool Street-Shenfield train describer. (1 800 words & fig.)

1952 **621** .431 .72 (41)
The Engineer, April 25, p. 560.
A multi-engined six coach Diesel train. (6 000 words & fig.)

1952 **621** .335 (460)
The Engineer, May 2, p. 601.
3 600 H. P. electric locomotive for Spanish National Railways. (800 words & fig.)

1952 **621** .438 (42)
The Engineer, May 16, p. 665.
Tests on gas turbine locomotive no 18 000. (4 800 words & fig.)

1952 **624** .2 (42)
The Engineer, May 23, p. 707.
Testing a prestressed concrete bridge. (2 200 words & fig.)

1952 **621** .132 .6 (42)
The Engineer, May 23, p. 711.
Standard class « 3 » tank engine. (900 words & fig.)

1952 **621** .431 .72 (42)
The Engineer, May 30, p. 740.
Experimental lightweight Diesel train. (2 400 words & fig.)

1952 **656** .212 .5 (42)
The Engineer, June 6, p. 758; June 13, p. 799.
The marshalling yard at Toton. (5 400 words & fig.)

Engineering. (London.)

1952 **621** .33 (42)
Engineering, February 8, p. 164; March 14, p. 321.
Electrification of the Manchester-Sheffield-Wath Railway *(to be continued)*. (5 000 words & fig.)

1952 **621** .33 (42)
Engineering, February 8, p. 180.
STOREY (H. H.) and WALLACE (G. A.). — **Overhead equipment for railway electrification in subsidence areas.** (1 800 words & fig.)

1952 **621** .135 .3 (42) & **621** .135 .4 (42)
Engineering, February 29, p. 287.
Resilient suspension and pivot for locomotive bogie. (200 words & fig.)

1952 **624** .63 (42)
Engineering, March 28, p. 413.
Prestressed concrete road bridge. (400 words & fig.)

1952 **625** .25
Engineering, April 4, p. 419.
HIRSCHHORN (J.). — **An analysis of the forces and pressure distribution in brake shoes.** (3 200 words & fig.)

Proceedings of the Institution of Civil Engineers. (London.)

1952 **691**
Proceedings of the Institution of Civil Engineers, Vol. I, July, No. 4, p. 390.
Relative economies of pre-tressed concrete compared with other forms of construction : aluminium; reinforced concrete, steel, and timber. (33 pages with tables and fig.)

1952 **691**
Proceedings of the Institution of Civil Engineers, Vol. I, August, No. 2, p. 222.
SAMUELY (F. J.). — **Some recent experience in composite pre-cast and in-situ concrete construction, with particular reference to pre-stressing.** (58 pages illustrated.)

The Locomotive. (London.)

1952 **621** .33 (
The Locomotive, April 15, p. 53.
HAUT (F. J. G.). — **The Manchester-Shenffield-W electrification scheme.** (700 words & fig.)

1952 **625** .242 (
The Locomotive, April 15, p. 56.
British Railways service wagons. (400 words & fig.)

1952 **621** .132 .1 (
The Locomotive, May 15, p. 68.
4-6-0 locomotives for Egypt. (1 000 words & fig.)

1952 **621** .335 (
The Locomotive, May 15, p. 76.
HAUT (F. J. G.). — **Italian electric locomotiv** (1 200 words & fig.)

The Journal of the Institution of Engineers, Australia. (Sydney.)

1952 **656**
The Journal of the Institution of Engineers, Austral April-May, p. 111.
BEATTIE (D. L.). — **Materials handling and termi arrangement and operation.** (6 000 words & fig.)

Modern Transport. (London.)

1952 **385** (09 (9
Modern Transport, March 15, p. 8.
BAIRD (C. E.). — **Transport developments in Tasman** (1 200 words & fig.)

1952 **385** (09 (9
Modern Transport, March 15, p. 9.
WISHART (R. N.). — **Victorian Government Railwa** £ 80 million recovery plan makes good progress. (1 words & fig.)

1952 **656** .222 (
Modern Transport, April 5, p. 3; April 12, p. 5.
MARGETTS (F. C.). — **Operating developments the Scottish Region.** Progress during 1948-1951. (3 4 words & fig.)

1952 **625** .232 (
Modern Transport, April 5, p. 6.
New Pullman cars. (400 words & fig.)

1952 **656** .254 (
Modern Transport, April 12, p. 12.
Train describers. Liverpool Street area, E. R. (600 wor & fig.)

The Oil Engine and Gas Turbine. (Londo

1952 **621** .431
The Oil Engine, July, p. 93.
Railcar and locomotive activities. (1 200 words & fi

Railway Age. (New York.)

2 **625** .232 (73)
ay Age, March 17, p. 76.
o « Congressionals » and the « Senator » re-equipped.
) words & fig.)

52 **625** .232 (73)
ay Age, March 17, p. 85.
w cars for the « Congressionals » and the « Senator ».
) words & fig.)

52 **625** .241 (73) & **625** .245 (73)
ay Age, March 24, p. 27.
DEBEL (G. L.). — **New cars for New Haven's rs-on-flats-service.** (1 500 words & fig.)

52 **656** .222 (73) & **656** .223 (73)
ay Age, March 24, p. 39.
UGHLIN (E. W.). — **How car service rules are to promote freight car efficiency.** (5 000 words & fig.)

52 **656** .212 .8 (73)
ay Age, March 31, p. 36.
w the Pennsylvania weighs moving cars with an onic scale. (1 000 words & fig.)

52 **656** .225 (73) & **656** .261 (73)
ay Age, April 7, p. 117.
DEBEL (G. L.). — **Loaded highway trailers are rtant traffic on the New Haven.** (2 000 words & fig.)

52 **625** .282 (73)
ay Age, April 7, p. 125.
w locomotive types. Steam. Gas turbine. Straight ric. (1 200 words & fig.)

52 **656** .257 (73)
ay Age, April 14, p. 39.
ain movements coordinated by consolidated control ree interlockings. (2 200 words & fig.)

52 **656** .212 (73)
ay Age, April 21, p. 58.
UGHLIN (E. W.). — **Can railroads avoid cross ing empty car in terminals?** (2 400 words & fig.)

952 **621** .33 (73) & **656** .2 (73)
ay Age, April 28, p. 39.
study of... Illinois Central suburban operations.
00 words & fig.)

952 **625** .162 (73) & **656** .254 (73)
ay Age, April 28, p. 50.
OYNTONS. VOORHEES. — **Changing conditions new slant to grade crossing problem.** (2 400 words g.)

952 **656** .254 (73)
ay Age, May 5, p. 76.
orthern Pacific installs two channel train and wayside o. (4 000 words & fig.)

1952 **656** .225 (73)
Railway Age, May 12, p. 65.
POTTS (Harry H.). — A four-point plan for improving **the handling of L. C. L.** (3 000 words & fig.)

1952 **656** .212 (73)
Railway Age, May 26, p. 44.
COUGHLIN (E. W.). — How can carriers secure better **car handling in yards and terminals?** (2 600 words & fig.)

Railway Engineering and Maintenance. (Chicago.)

1952 **625** .17 (73)
Railway Engineering and Maintenance, March, p. 258.
Railroad men as inventors... **show ingenuity in developing M-W machines.** (3 200 words & fig.)

1952 **625** .17 (73)
Railway Engineering and Maintenance, March, p. 275.
CLAFFEY (P. J.). — **Charts show savings with power machines.** (2 800 words & fig.)

The Railway Gazette. (London.)

1952 **625** .245 (41)
The Railway Gazette, April 4, p. 378.
Recent bridging practice in Rhodesia. (1 200 words & fig.)

1952 **625** .162 (54)
The Railway Gazette, April 4, p. 381.
Power-operated crossing gates in India. (1 100 words & fig.)

1952 **621** .431 .72
The Railway Gazette, April 11, p. 402.
KOFFMAN (J. L.). — **Efficiency of Diesel** locomotives. (2 600 words & fig.)

1952 **656** .254 (42)
The Railway Gazette, April 11, p. 409.
Train describers for Liverpool Street-Shenfield electrification. (1 500 words & fig.)

1952 **621** .335 (73)
The Railway Gazette, April 18, p. 432.
New electric freight locomotive for the Pennsylvania. (1 400 words & fig.)

1952 **621** .33
The Railway Gazette, April 18, p. 434.
Lightning protection for D. C. rolling stock. (200 words & fig.)

1952 **621** .335 (94)
The Railway Gazette, April 18, p. 435.
Electric locomotives for Australia. (500 words & fig.)

1952 **385** (09 (52)
The Railway Gazette, April 18, p. 436.
Japanese Railway progress. (1 400 words & fig.)

1952 **625** .143 .5 (42)
The Railway Gazette, April 25, p. 461.
Disney resilient rail chair. (1 200 words & fig.)

1952 **621** .133 .7 (43)
The Railway Gazette, April 25, p. 463.
Henschel feed-water heater. (1 400 words & fig.)

1952 **385** (0615
The Railway Gazette, May 2, p. 487.
International railway research. (1 300 words).

1952 **625** .212 (42)
The Railway Gazette, May 2, p. 489.
Continuous process wheel rolling mill. (2 200 words & fig.)

1952 **621** .335 (460)
The Railway Gazette, May 9, p. 517.
Electric locomotives for Spanish National Railways. (1 500 words & fig.)

1952 **625** .241 (42)
The Railway Gazette, May 9, p. 521.
British Railways standard wagons. (300 words & fig.)

Diesel Railway Traction. (London.)

1952 **621** .431 .72 (6)
Diesel Railway Traction, February, p. 30.
British railcars for West Africa. (500 words & fig.)

1952 **621** .431 .72
Diesel Railway Traction, February, p. 32.
New M. A. N. twin-bank engine. (1 300 words & fig.)

1952 **621** .431 .72
Diesel Railway Traction, February, p. 39.
High-power locomotive oil engines. (3 000 words & fig.)

1952 **621** .431 .72 (931)
Diesel Railway Traction, March, p. 55.
Diesel-electric locomotives for New-Zealand. (2 400 words & fig.)

1952 **621** .438 (42)
Diesel Railway Traction, March, p. 59.
British-built gas-turbine locomotive. (4 000 words & fig.)

1952 **621** .431 .72 (481)
Diesel Railway Traction, March, p. 66.
High speed trains for Norway. (2 000 words & fig.)

1952 **621** .431 .72 (942)
Diesel Railway Traction, April, p. 77.
South Australian main-line locomotives. (4 000 words & fig.)

1952 **621** .431 .72 (56)
Diesel Railway Traction, April, p. 85.
Express trains for Turkey. (1 200 words & fig.)

1952 **621** .431 .72 (4
Diesel Railway Traction, May, p. 103.
The Renault engines. (6 000 words & fig.)

1952 **621** .431 .
Diesel Railway Traction, June, p. 124.
The development of Diesel traction. (46 pag
illustrated.)

Railway Mechanical and Electrical Enginee (New York.)

1952 **621** .431 .72 (7
Railway Mechanical and Electrical Engineer, April, p. 6
SENNSTROM (H. R.). — **How spectrograph analysis controls Diesel engine maintenance.** (3 200 wor & fig.)

1952 **625** .242 (7
Railway Mechanical and Electrical Engineer, May, p. 7
C. & E. T. gets new 50 and 70 ton hopper cars. (2 20 words & fig.)

1952 **621** .33 (7
Railway Mechanical and Electrical Engineer, May, p. 7
Test rack improves locomotive operation. (2 400 wor & fig.)

1952 **621** .431 .72 (7
Railway Mechanical and Electrical Engineer, May, p. 8
GRIFFITH (C. H.) and PFEIL (E. H.). — **Road tes show the way to better locomotive performance.** (2 4 words & fig.)

1952 **625** .212 (7
Railway Mechanical and Electrical Engineer, June, p. 9
New Great Northern wheel shop. (4 400 words & fig.)

1952 **621** .431 .72 (7
Railway Mechanical and Electrical Engineer, June, p. 6
MENGEL (A. C.). — **Control of corrosion in loc motive Diesel engines.**

1952 **621** .431 .72 (7
Railway Mechanical and Electrical Engineer, June, p. 8
« **Treadmills** » **test locomotives.** (1 000 words & fig.)

1952 **621** .431 .72 (7
Railway Mechanical and Electrical Engineer, July, p. 6
E. M. D. builds six-wheel switcher for special dut (1 400 words & fig.)

In Spanish.

Ferrocarriles y Tranvias. (Madrid.)

1952 **385** .5
Ferrocarriles y Tranvias, mayo, p. 161.
VILLAR (M.). — **Formación profesional ferroviari** (2 500 palabras.)

952 625 .113
rocarriles y Tranvias, mayo, p. 168.
ALBAS (A.). — **Replanteo de curvas para ferrocarril.** 00 palabras & fig.)

952 385
rocarriles y Tranvias, mayo, p. 172.
ANDOVAL CAMPDERA (J. M.). — Esencia y cendencia de la **ordenación ferroviaria.** (3 000 pala-s.)

952 625 .142 .2
rocarriles y Tranvias, junio, p. 203.
ERAN Y GALINDO (A.). — Estado actual de los dios sobre la **conservación de la madera y en especial as traviesas de ferrocarril.** (4 000 palabras & fig.)

952 656 .254 (460)
rocarriles y Tranvias, junio, p. 209.
JRQUI MARIN (L.) & JOSE RAMIL (J.). — ndamentos del sistema de **mando centralizado de ico** (C. T. C.) tipo K. (2 000 palabras & fig.)

952 625 .26
rocarriles y Tranvias, junio, p. 223.
LANPAIN (E.). — Se impone el procedimiento nómico para el **torneada de las ruedas de vagones y motoras.** (2 000 palabras & fig.)

Hormigón elastico. (Buenos Aires.)

952 624 .2 (73) & 691 (73)
rmigón elastico, enero, p. 5.
MAGNEL (G.). — Ensayo de una **viga de hormigón comprimido de 47 m de luz** realizada en Filadelfia. 00 palabras, tablas & fig.)

952 624 .2 & 691
rmigón elastico, febrero, p. 3.
ABELES (P. W.). — **Ensayos de rotura de tres vigas puente precomprimidas,** de tamaño natural. (6 000 abras & fig.)

952 624 .2 & 691
rmigón elastico, marzo, p. 3.
MAGNEL (G.). — **Ensayo hasta la rotura de una viga tinua de hormigón precomprimido.** (3 000 palabras ig.)

952 691
rmigón elastico, abril, p. 3.
PISTOR (L.). — **Calculo de secciones de hormigón comprimido.** (4 000 palabras & fig.)

In Italian.

Ingegneria ferroviaria. (Roma.)

952 656 .222 .5 (45)
egneria ferroviaria, aprile, p. 291.
AMOROSO (M.). — **Elasticità del traffico viaggiatori** a rete delle F. S. (1 500 parole, tabelle & fig.)

1952 621 .33
Ingegneria ferroviaria, aprile, p. 295.
MUSSO (G.). — Considerazioni sul problema della **trazione monofase a frequenza industriale.** (7 000 parole & fig.)

1952 621 .335
Ingegneria ferroviaria, aprile, p. 307.
ZAMBONI (L.) & ZATTONI (T.). — Sulla convenienza dell' **impiego delle locomotive elettriche di manovra.** (3 000 parole.)

1952 621 .32
Ingegneria ferroviaria, aprile, p. 311.
MELIARCA (R.). — Considerazioni sulle prove di collaudo e sull' impiego pratico delle **lampade fluorescenti.** (3 000 parole & fig.)

1952 656 .257 (43)
Ingegneria ferroviaria, maggio, p. 353.
DOBMAIER (A.). — **Gli apparati centrali elettrici a banco geografico** della Deutsche Bundesbahn. (2 500 parole & fig.)

1952 621 .33 & 656 .256
Ingegneria ferroviaria, maggio, p. 359.
DONATI (F.) & RIGHI (R.). — **Correnti e circuiti di segnalamento su linee elettrificate** a corrente alternata trifase o monofase. (8 000 parole & fig.)

1952 625 .13
Ingegneria ferroviaria, maggio, p. 373.
LA MAGNA (L.). — **Le gallerie di protezione.** (6 000 parole & fig.)

1952 621 .335
Ingegneria ferroviaria, maggio, p. 384.
DIEGOLI (M.) & DE PAOLIS (S.). — **Locomotive elettriche a corrente continua con eccitazione composta.** (5 000 parole & fig.)

Rivista di Ingegneria. (Milano.)

1952 624 .51 (45)
Rivista di Ingegneria, febbraio, p. 141.
MASI (F.). — **Progetto di un ponte sospeso sullo Stretto di Messina.** (1 500 parole & fig.)

1952 624 .51 (45)
Rivista di Ingegneria, aprile, p. 404.
ZUCCOLO (G.). — **Progetto di un ponte sospeso sullo Stretto di Messina.** Studio delle **fondazioni.** (2 000 parole & fig.)

1952 621 .436
Rivista di Ingegneria, giugno, p. 669; luglio, p. 797.
RUBBO (V.). — Contributo allo **studio dei moderni criteri costruttivi e funzionali dei motori Diesel.** (7 000 parole, tabelle & fig.)

In Netherlands.

Spoor- en Tramwegen. (Utrecht.)

1952 **621** .33 (492) & **625** .1 (492)
Spoor- en Tramwegen, nr 10, 15 Mei, p. 153-156.
VAN DER HOEK (E.). — De **electrificatie der Noorderlijnen.** (1 000 woorden & fig.)
LOHMANN (J.). — **Weg en werken bij de Noorder Electrificatie.** (2 000 woorden & fig.)

1952 **621** .33 (492)
Spoor- en Tramwegen, nr 10, 15 Mei, p. 159.
VAN DER VEEN (P.). — Een **eenvoudige laad-inrichting voor accubatterijen** gevoed uit de 1 500 Volt bovenleiding. (500 woorden & fig.)

1952 **629** .11 (492)
Spoor- en Tramwegen, nr 11, 29 Mei, p. 173.
KLOOS (W. B.). — Enkele recente voorbeelden van **autobusstations** in Nederland. (2 500 woorden & fig.)

1952 **656** .212 .7
Spoor- en Tramwegen, nr 12, 12 Juni, p. 189.
VAN DEN BERG (J.). — **Goederenloodsen.** (2 500 woorden & fig.)

1952 **624** .8 (49
Spoor- en Tramwegen, nr 13, 26 Juni, p. 205.
DE BRUINE (J.). — De **spoorwegoverbrugging** Grouw. (1 200 woorden & fig.)

In Portuguese.

Gazeta dos Caminhos de ferro. (Lisboa.)

1952 **656** .1
Gazeta dos Caminhos de ferro, nº 1 539, 1 de fevereir p. 467.
TORROAIS VALENTE (R. A.). — **Europabus** uma nova manifestaçào da colaboraçâo dos Caminh de ferro europeus. (4 000 palavras.)

1952 **621** .392 & **625** .144
Gazeta dos Caminhos de ferro, nº 1 546, 16 de ma p. 99; nº 1 547, 1 de junho, p. 115; nº 1 549, 1 julho, p. 151.
GALRINHO PERNES (O.). — Problemas da férrea. **Carris contínuos.** (2 500 palavras & fig.)

M. Weissenbruch & Co., Ltd., Printer to the King, 49, rue du Poinçon, Bruxelles.

MONTHLY BIBLIOGRAPHY OF RAILWAYS[1]

PUBLISHED UNDER THE SUPERVISION OF

P. GHILAIN,

General Secretary of the Permanent Commission of the International Railway Congress Association.

(DECEMBER 1952)

. 385. (02]

I. — BOOKS.

In French.

52 624 .9
S (L.).
lcul des ossatures des constructions. Tome I.
uxelles, Centre Belgo-Luxembourgeois d'information Acier, 154, avenue Louise. Un volume (20 × 27 cm) 52 pages, avec figures. (Prix : 500 fr. b.)

52 691
CELO (G.) & RICOUARD (J.).
vibration du béton.
ris, Eyrolles, éditeur. Un volume (16 × 25 cm) 20 pages, avec figures. (Prix : 1 300 fr. fr.)

52 691
NS (U. R.).
écis de corrosion. Traduit de l'anglais par ECHAUX.
ris, Dunod, éditeur. Un volume (16 × 25 cm) de pages, avec 66 figures et 20 tableaux. (Prix : 0 fr. fr.)

52 691
ENMANN-PILARSKI (J.).
alcul des voiles minces en béton armé. 2e édition.
aris, Dunod, éditeur, 92, rue Bonaparte. Un volume × 25 cm) de 212 pages avec 152 figures. (Prix : 0 fr. fr.)

52 62 (01
NDIN.
ide-mémoire Dunod. — Résistance des matériaux. — tériaux de construction.
aris, Dunod, éditeur. Un volume (10 × 15 cm) de pages, avec 241 figures. (Prix : relié, 450 fr. fr.)

951 624 .2
LAND (E.).
e calcul des systèmes hyperstatiques (portiques con-s, poutre Vierendeel).
ruxelles, Centre Belgo-Luxembourgeois d'information l'Acier, éditeur, 154, avenue Louise. Un volume × 30 cm) de 68 pages et 76 figures.

1952 385 (08 (493)
SOCIÉTÉ NATIONALE DES CHEMINS DE FER VICINAUX.

Rapports présentés par le Conseil d'Administration et par le Comité de Surveillance. Soixante-septième exercice social (1951).

Bruxelles, Imprimerie Graphica, 54, rue Auguste Lambiotte. Une brochure (22 × 29.5 cm) de 144 pages.

In German.

1951 624 (494)
ROŠ (M.).
Versuche und Erfahrungen an in der Schweiz ausgeführten Stahlbauten, 1922-1945.

Zurich, édité par l'Union des Constructeurs suisses de Ponts et Charpentes métalliques. Un volume (22 × 31 cm) de 100 pages, avec 237 figures.

1951 624 & 691
STRASSNER (A.).
Neuere Methoden zur Statik der Rahmentragwerke und der elastischen Bogenträger mit besonderer Berücksichtigung der Anwendung in der Praxis des Beton- und Stahlbetonbaues. 5. erweiterte Auflage. I. Band, 1. Teil : *Der durchlaufende Rahmen und Bogen.*

Berlin, Verlag Wilhelm Ernst & Sohn. 154 Seiten, mit 214 Textabbildungen. (Preis : geh. : DM. 22.50.)

1952 69
Dr. phil. Bruno TIEDEMANN.
Über Bodenuntersuchungen bei Entwurf und Ausführung von Ingenieurbauten. 4. Auflage, neubearbeitet von Prof. Dr. Kurd von BÜLOW.

Berlin, Verlag von Wilhelm Ernst & Sohn. 72 Seiten Din A5 mit 33 Bildern und 7 Tafeln. (Preis : geheftet : DM. 8.50.)

(1) The numbers placed over the title of each book are those of the decimal classification proposed by the Railway Congress ointly with the Office Bibliographique International, of Brussels, (See « Bibliographical Decimal Classification as applied to Railway nce », by L. WEISSENBRUCH, in the number for November 1897, of the *Bulletin of the International Railway Congress* p 1509.)

In English.

1952 656 .2
AHRONS (E. L.).
Locomotive and train working in the latter part of the nineteenth century. Volume III.
Reprinted from *The Railway Magazine*. Edited by L. L. ASHER.
Cambridge : W. Heffer & Sons Ltd. One volume of 113 pages (6 × 9 inches), illustrated. (Price : 15 s.)

1952 537 & 621 .33
BLAXLAND-STUBBS (S. G.) and BAYNTON (R. A.).
The new Electrical Encycl paedia. 4 volumes.
London : The Waverley Book Company, Limited, 96-97, Farringdon street, E. C. 4. (Price : 8 guineas, complete.)

1952 62 (01 & 691
HOGNESTAD (E.).
What do we know about diagonal tension and web reinforcement in concrete?
University of Illinois Engineering Experiment Station, Circular Series No. 64.
One brochure of 47 pages, published by the University of Illinois, Urbana. (Price : $ 0.50.)

1952
HRONES (J. A.) and NELSON (G. L.).
Analysis of the four-bar linkage : Its application to the synthesis of mechanisms.
London : Chapman and Hall, Limited, 37, Essex street, W. C. 2. (Price : 120 s. net.)

1952
PORGES (John).
Handbook of heating, ventilating, and air conditioning. Third edition.
London : Newnes, George, Tower House, Southampton street, Strand, W. C. 2. (Price : 25 s. net.)

1952 656
SANDERSON (H. F.).
Railway Commercial Practice : Volume I. General and Passenger.
London : Chapman and Hall, Ltd., 37, Essex street, W. C. 2. (Price : 25 s.)

1952
TRIGG (C. F.).
An engineer's approach to corrosion.
London : Sir Isaac Pitman and Sons, Limited, Parker street, Kingsway, W. C. 2.

[**016.** 385. (05]

II. — PERIODICALS.

In French.

Bulletin scientifique de l'Association des Ingénieurs électriciens sortis de l'Institut Électrotechnique Montefiore. (Liège.)

1952 621 .332
Bulletin scient. de l'Assoc. des Ing. électric. sortis de l'Institut Electrotech. Montefiore, mars, p. 159.
VAN CAUWENBERGHE (J.). — **Télécommande et télésignalisation.** Application aux réseaux d'alimentation des chemins de fer électrifiés. (6 000 mots & fig.)

Bulletin de la Société Royale belge des Ingénieurs et des Industriels. (Bruxelles.)

1952 625 .244 (4) & 656 .225 (4)
Bull. de la Soc. Royale belge des Ing. et des Indust., février, p. 17.
BALENSI. — Le problème du **transport des denrées périssables** en Europe. (4 000 mots.)

1952 6
Bull. de la Soc. Royale belge des Ing. et des Indust. avril, p. 51.
LAMBERT (E.). — Le **béton précontraint** est-il plus coûteux que le béton armé? (1 500 mots & fig.)

1952 385 (49
Bull. de la Soc. Royale belge des Ing. et des Indust. août, p. 160.
DESORGHER (E.). — Les **Chemins de fer dans l'Economie belge.** (7 000 mots & fig.)

Bulletin des transports internationaux par chemins de fer. (Berne.)

1952 385 .113 (43
Bull. des transp. intern. par Chemins de fer, mai, p. 144
Résultats d'exploitation des Chemins de fer fédéraux autrichiens pour l'année 1951. (1 000 mots.)

1952 385 .113 (494
Bull. des transp. intern. par Chemins de fer, mai, p. 146
Rapport des Chemins de fer fédéraux sur la **gestion** et les **comptes de l'année 1951.** (1 600 mots.)

Bulletin de l'Union internationale des Chemins de fer. (Paris.)

2 **385** (06 .15
tin de l'Union intern. des Ch. de fer, mai, p. 132.
rganisation et les activités de l'**Union Internationale hemins de fer.** (2 500 mots & planche.)

---

52 **656** .1 (4)
tin de l'Union intern. des Ch. de fer, juin, p. 146.
IRUPP (R. D.). — **Problèmes routiers internationaux** urope. Activités du Sous-Comité des Transports iers de la Commission Economique pour l'Europe. 0 mots.)

Economie et Technique des Transports. (Zürich.)

52 **625** .212 (44) & **625** .42 (44)
omie et Technique des Transports, nos 1-3, p. 4.
MET (M.). — **Essai d'une voiture automotrice de opolitain, équipée de pneumatiques** (par la Régie nome des Transports Parisiens, R. A. T. P.). 0 mots & fig.)

---

52 **385** .11
omie et Technique des Transports, nos 1-3, p. 13; nos 4-6, p. 37.
UG (Ad.-M.). — De quelques particularités qui encent l'**économie de l'exploitation de chemins de fer.** *uivre.)* (5 000 mots & fig.)

Electricité. (Paris.)

52 **621** .31
tricité, juin, p. 123.
EAUFAY (A.). — Détermination de la **section économ e des conducteurs des lignes électriques.** (4 000 mots, eaux & fig.)

---

952 **621** .336
tricité, juin, p. 15.
ouvelle technique de **graissage du fil de contact** de mins de fer électriques. (500 mots.)

---

952 **621** .33
tricité, juillet-août, p. 158.
'**inauguration de la traction électrique** entre Paris et n, (2 500 mots.)

L'Industrie des Voies ferrées et des Transports automobiles. (Paris.)

952 **656** .1 & **656** .2
ndustrie des Voies ferr. et des Transp. automobiles, juin, p. 83.
es **rames légères Floirat** dans les Réseaux d'outre- r. (1 000 mots & fig.)

1952 **629** .113 .62
L'Industrie des Voies ferr. et des Transp. automobiles, juillet-août, p. 100.
MOLES (A.). — **Essais d'usure en laboratoire des frotteurs et des lignes aériennes de contact** des réseaux de trolleybus. (2 000 mots & fig.)

L'Ossature métallique. (Bruxelles.)

1952 **621** .392 (494) & **624** (494)
L'Ossature métallique, mai, p. 249.
FREI. — Un **nouveau pont de chemin de fer en acier soudé.** (2 000 mots & fig.)

1952 **624** .9
L'Ossature métallique, juillet-août, p. 385.
VERDEYEN (J.). — **Ossatures en béton armé ou métalliques ?** (3 000 mots & fig.)

1952 **624** (497 .1)
L'Ossature métallique, septembre, p. 429.
RADOJKOVIC (M.). — La **reconstruction de ponts de chemin de fer** en Yougoslavie. (5 000 mots & fig.)

Revue de l'Aluminium. (Paris.)

1952 **625** .212 (494) & **625** .23 (494)
Revue de l'Aluminium, mars, p. 101.
VALEUR (J.). — La **voiture sur pneumatiques** des Chemins de fer fédéraux suisses. Comparaison entre les voitures en alliages légers construites par la Société Industrielle Suisse et la Compagnie Industrielle de Matériel de Transport. (3 000 mots & fig.)

1952 **621** .392 & **621** .431 .72
Revue de l'Aluminium, avril, p. 134.
La **recharge par soudage des pistons en alliage léger** pour les locomotives Diesel. (600 mots, tableau & fig.)

1952 **625** .24 (44) & **669** .71 (44)
Revue de l'Aluminium, juin, p. 239.
Une expérience involontaire prouve l'excellente **résistance des wagons en alliages légers.** (800 mots.)

Revue Générale des Chemins de fer. (Paris.)

1952 **625** .111 (44) & **625** .42 (44)
Revue générale des Chemins de fer, juillet, p. 289.
FAUCONNIER. — Le **prolongement de la ligne n° 13 et les aménagements de la station Saint-Lazare** du Métropolitain de Paris. (12 000 mots, fig. & planche hors texte.)

1952 **625** .151
Revue générale des Chemins de fer, juillet, p. 308.
RÈMOND. — **Appareils de voie pour les gares de voie unique.** (2 500 mots & fig.)

1952 **625** .154 (44)
Revue générale des Chemins de fer, juillet, p. 313.
ROUSSE (R.). — Les **ponts tournants unifiés** pour locomotives. (1 700 mots & fig.)

Revue de l'Association française des Amis des Chemins de fer. (Paris.)

1952 **621** .132 .3 (44)
Revue de l'Assoc. franç. des Amis des Ch. de fer, mai-juin, p. 57.
CAIRE (D.). — Le **travail quotidien des Mikado** américaines de la série 141R. Les services rendus et les problèmes posés par leur entretien. (3 500 mots, tableaux & fig.)

1952 **621** .335 (492)
Revue de l'Assoc. franç. des Amis des Ch. de fer, mai-juin, p. 65.
NYMEYER (A. G.). — Les nouvelles **locomotives électriques CC** de conception américaine des Chemins de fer Néerlandais. (5 000 mots & fig.)

1952 **621** .335 : **625** .42 (44)
Revue de l'Assoc. franç. des Amis des Ch. de fer, mai-juin, p. 73.
GACHE (A.). — Les **éléments articulés E 001 à 040** du Réseau ferré de la R. A. T. P. (6 000 mots & fig.)

Science et Vie. (Paris.)

1952 **625** .62
Science et Vie, mars, p. 197.
BARDOT (F.). — **Les véhicules à grande capacité et le problème du trafic urbain.** (2 000 mots & fig.)

Trains. (Bruxelles.)

1952 **624** (493)
Trains, nº 7, février, p. 15.
DUBUS (J.). — Quelques **techniques nouvelles** appliquées à la S. N. C. B. depuis 1926 dans l'**art de construire.** (2 000 mots & fig.)

1952 **385** .586 (493)
Trains, nº 7, février, p. 33.
MONNOYE (P.). — L'**Ecole d'apprentissage** du Service de l'Electricité et de la Signalisation (S. N. C. B.). (2 000 mots & fig.)

La Vie du Rail. (Paris.)

1952 **621** .133 .1 (44)
La Vie du Rail, 5 mai, p. 3.
RAVELLI (J.). — Le **bilan énergétique** de la S.N.C.F. (800 mots & fig.)

1952 **621** .131
La Vie du Rail, 5 mai, p. 12.
VILAIN (L.). — **Locomotives articulées.** (1 500 m & fig.)

1952 **621** .138 .1
La Vie du Rail, 26 mai, p. 3.
FORCE (G.). — La Chapelle — **dépôt de vite grandes lignes.** (1 300 mots & fig.)

1952 **621** .33
La Vie du Rail, 9 juin, p. 3; 16 juin, p. 7.
L'**électrification** de l'Etoile d'Ambérieu. (2 000 m & fig.)

1952 **621** .335 (4
La Vie du Rail, 24 juin, p. 4.
Les récentes **locomotives électriques** hollandai (1 000 mots & fig.)

1952 **625** .2
La Vie du Rail, 30 juin, p. 3.
Le banc de compression de 900 t de la S. N. C. pour **essais de résistance du matériel roulant.** (1 000 m & fig.)

1952 **621** .335 (4
La Vie du Rail, 30 juin, p. 6.
Traction électrique néerlandaise et nouvelles lo motives CC. (1 000 mots & fig.)

In German.

Der Eisenbahningenieur. (Frankfurt a. Mai

1952 **625**
Der Eisenbahningenieur, Juli, S. 136.
DRÖSEMEYER (W.). — Das **Durcharbeiten** Gleise. (3 000 Wörter & Abb.)

1952 **6**
Der Eisenbahningenieur, Juli, S. 140.
JUNGK (R.). — **Kranwagen im Eisenbahnbrückenba** (1 500 Wörter & Abb.)

1952 **625** .154 (4
Der Eisenbahningenieur, Juli, S. 147.
PREISIGKE (W.). — Ein Beitrag zur **Unterhaltung d Drehscheiben und Schiebebühnen.** (2 000 Wörter & Abb

---

1952 **625** .2
Der Eisenbahningenieur, Juli, S. 150.
MAYER (J.). — **Anschweissungen und Flachstellen** Radreifen der Güterwagen. (1 000 Wörter & Abb.)

1952 **625** .1
Der Eisenbahningenieur, Juli, S. 152.
KLOSTERMANN (K.). — Die Festlegung Tangenten bei **Bogenabsteckungen nach dem Winkelbi verfahren.** (1 000 Wörter & Abb.)

.T. R. Eisenbahntechnische Rundschau. (Köln-Darmstadt.)

52 **625** .162 & **656** .254
bahntechnische Rundschau, Juni, S. 181.
ÖRNER (H.). — Über die **Sicherung von Bahn-**
ängen. (8 000 Wörter & Abb.)

---

52 **656** .211
bahntechnische Rundschau, Juni, S. 193.
UCHTINGER (M.-E.). — **Bahnhofplätze, ihre**
altung unter dem Einfluss des Strassenverkehrs.
0 Wörter & Abb.)

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52 **656** .211
bahntechnische Rundschau, Juni, S. 208.
MBERT (W.) & KECKEISEN (W.). — **Bahnhof-**
e, ihre Gestaltung unter dem Einfluss des Eisenbahn-
hrs. (6 000 Wörter & Abb.)

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52 **624** (43)
bahntechnische Rundschau, Juli, S. 221.
RÜCKMANN (B.). — **Statik und Kinetik der**
ken als Aufgaben der Versuchsforschung bei der
schen Bundesbahn. Rückblick, Grundlagen und
hrungen. (6 000 Wörter & Abb.)

---

52 **656** .222 .5
bahntechnische Rundschau, Juli, S. 229.
ERTEIS (A.). — Der **Personenzugverkehr,** betriebs-
chaftlich gesehen. (15 000 Wörter & Abb.)

---

52 **656** .27 (43)
bahntechnische Rundschau, Juli, S. 246.
OHDE (W.). — Die **wirtschaftliche Bedeutung der**
nbahnen für die Deutsche Bundesbahn. (5 000 Wör-
& Abb.)

Glasers Annalen. (Berlin.)

952 **621** .133 .2
sers Annalen, Mai, S. 99.
ROSS (A.). — **Mathematisch-graphische Methode**
die Berechnung fester Stehbolzen mit zylindrischem
ft bei allen vorkommenden Beanspruchungsfällen.
00 Wörter & Abb.)

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952 **621** .431 .72 (460) & **625** .232 (460)
sers Annalen, Mai, S. 110.
AMACHER (F. W.). — Der **Spanische Ultraleicht-**
nkzug TALGO. (5 000 Wörter & Abb.)

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952 **621** .33
sers Annalen, August, S. 175.
LÜSCHE (W.). — **Probleme der Bahn-Elektrifizie-**
g. (7 000 Wörter & Abb.)

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952 **656** .222 .5
sers Annalen, August, S. 185.
ALISCH (W.). — Lokomotiv-Typenwahl und
rzeitverkürzung im **Eisenbahn-Nahverkehr.** (2 000
rter & Abb.)

Internationales Archiv für Verkehrswesen. (Mainz.)

1952 **625** .42 (43)
Int. Archiv für Verkehrswesen, nr 12, 2. Juniheft, S. 265.
GROCHE (G.). — Die **Umstellung des Hamburger U-Bahnbetriebes.** (2 000 Wörter & Abb.)

1952 **625** .162 & **656** .254
Int. Archiv für Verkehrswesen, nr 14, 2. Juliheft, S. 328 und 335.
WIEGAND (O.). — **Die Bedeutung der Bahnkreuzungen** im Verkehrsnetz. (6 000 Wörter & Abb.)
MAU (H.). — **Neue Wege der Sicherungstechnik bei schienengleichen Wegkreuzungen.** (8 000 Wörter & Abb.)

Schweizerisches Archiv für Verkehrswissenschaft und Verkehrspolitik. (Zürich.)

1952 **656**
Schweizerisches Archiv für Verkehrswissenschaft und Verkehrspolitik, Nr 1, S. 1.
PIRATH (O.). — Die verkehrswirtschaftlichen Tatbestände und die **Neuordnung im Verkehrswesen.** (8 000 Wörter.)

1952 **385** .1
Schweizerisches Archiv für Verkehrswissenschaft und Verkehrspolitik, Nr 1, S. 22.
FAVRE (J.). — **L'assainissement des chemins de fer** dans le cadre d'une politique générale des transports. (5 000 mots.)

1952 **385** (09 .3 (494)
Schweizerisches Archiv für Verkehrswissenschaft und Verkehrspolitik, Nr 2, S. 97.
SULZER (K.). — Der **Staatsbau der schweizerischen Eisenbahnen.** Zur Entstehung des Eisenbahngesetzes von 1852. (7 000 Wörter.)

1952 **656** .1 (4)
Schweizerisches Archiv für Verkehrswissenschaft und Verkehrspolitik, Nr 2, S. 118.
WELLAUER (P.). — Die **Fiskalbelastung des Motorfahrzeugverkehrs** im Ausland und in der Schweiz. (7 000 Wörter & Tabellen.)

1952 **656** .222 .1
Schweizerisches Archiv für Verkehrswissenschaft und Verkehrspolitik, Nr 2, S. 141.
BAUMGARTNER (J.-P.). — **L'augmentation de la vitesse des trains, facteur d'économie.** (3 000 mots.)

Signal und Draht. (Frankfurt-Main.)

1952 **656** .25
Signal und Draht, Mai, S. 81.
LENTZ (G.). — Über die **Sicherheit der Signalschaltungen.** (3 000 Wörter.)

1952 **656** .257
Signal und Draht, Juni, S. 91; Juli, S. 109.
SCHMITZ (W.). — **Schaltungsmethoden.** (8 000 Wörter & Abb.)

1952 **656** .224
Signal und Draht, Juni, S. 99.
AST (W.). — **Fernsprecheinrichtung für Reisezugauskunft.** (800 Wörter & Abb.)

1952 **656** .257 (43)
Signal und Draht, August, S. 121; September, S. 147.
REHSCHUH (G.). — **Gleisbildstellwerk Dr S.** (10 000 Wörter & Abb.)

In English.

The Engineer. (London.)

1952 **625** .232 (42)
The Engineer, July 11, p. 66.
Tube cars with shunting control equipment. (600 words & figs.)

1952 **621** .438 (42)
The Engineer, July 18, p. 102.
POULTNEY (E. C.). — Performances of the Western Region **gas turbine locomotive No. 18 000.** (1 300 words & tables.)

1952 **621** .131 .1 (42)
The Engineer, July 25, p. 115.
NOCK (O. S.). — **Present-day locomotive working in Great Britain.** (2 900 words, tables & figs.)

1952 **625** .245 (42)
The Engineer, August 1, p. 168.
Transformer trolleys for British Railways. (400 words & figs.)

Engineering. (London.)

1952 **625** .212 (42)
Engineering, April 25, p. 515.
Railway wheel mill of Messrs. Steel, Peech and Tozer, Sheffield. (1 400 words & figs.)

1952 **621** .431 .72 (42)
Engineering, April 25, p. 520.
Multi-engined Diesel trains for Ulster. (1 500 words & figs.)

1952 **621** .335 (460)
Engineering, May 2, p. 562.
3 600 HP, 3 000-volt electric locomotives for the Spanish National Railways. (400 words & figs.)

1952 **62** (01 (42) & **624** .0 (42)
Engineering, May 9, p. 595.
Test of pretressed concrete bridge. (1 800 words, table & figs.)

The Locomotive. (London.)

1952 **621** .132 .1 (
The Locomotive, June 14, p. 84.
4-8-2 locos for New Zealand. (400 words & figs.)

1952 **621** .335 (
The Locomotive, June 14, p. 99.
3 600 HP electric locomotives for Spain. (500 w
& fig.)

1952 **621** .132 .5
The Locomotive, July 15, p. 104.
2-8-0 locomotives, Egyptian State Railways. (400 w
& fig.)

Modern Transport. (London.)

1952 **656** .212 .8
Modern Transport, April 19, p. 9.
Palletised traffic on railways. (300 words & fig.)

1952 **656** .212 .8
Modern Transport, April 19, p. 9; June 7, p. 5.
Palletisation exhibition. (2 300 words & fig.)

1952 **621** .431 .72
Modern Transport, April 26, p. 4; May 3, p. 6; May
p. 11.
New multi-engine Diesel train. (3 500 words & fig.)

1952 **621** .335 (
Modern Transport, May 10, p. 3.
**Locomotives for Spain. First of sixty 3 600 HP u
completed.** (1 300 words & fig.)

1952 **621** .132 .6
Modern Transport, May 24, p. 3.
New standard tank engine. (1 200 words & fig.)

1952 **656** .212 .8
Modern Transport, June 7, p. 3.
PICKFORD (A. C. B.). — **Mechanical handl
equipment.** (1 400 words & fig.)

1952 **656** .225
Modern Transport, June 7, p. 9.
B. R. S. experience with palletisation. (1 200 wo
& fig.)

1952 **621** .33
Modern Transport, June 7, p. 17.
Wath-Dunford bridge electrification. (1 200 wo
& fig.)

1952 **621** .431 .72
Modern Transport, June 21, p. 4.
Railcar trials on British Railways. (1 200 words & f

1952 **385** (09
Modern Transport, June 28, p. 3.
Railways of India and Pakistan. — Results of partit
and self-government. (3 800 words & map.)

2 **625** .4 (460)
rn Transport, July 19, p. 7.
Madrid Metropolitan Railway. (1 600 words & fig.)

---

2 **656** .225 & **656** .261
rn Transport, August 2, p. 3.
or-to-door transport. (2 000 words & fig.)

---

2 **625** .245 (42)
rn Transport, August 2, p. 6.
cial vehicles for electrical gear. (500 words & fig.)

Railway Age. (New York.)

52 **656** .212 (73)
vay Age, June 2, p. 82.
e-assembled retarders go in fast. (1 800 words & fig.)

---

52 **621** .431 .72 (73)
vay Age, June 2, p. 85.
ctro-Motive introduces new **six-motor switcher.**
0 words & fig.)

---

52 **625** .241 (73)
vay Age, June 16, p. 55.
e Pennsylvania builds **a million-pound well car.**
words & fig.)

---

52 **625** .162 (73) & **626** .254 (73)
vay Age, June 23, p. 78.
nois Central installs **modern protection at 13 street**
ings. (1 200 words & fig.)

---

52 **656** .212 (73)
way Age, June 30, p. 65.
the Milwaukee's Air Line yard... **New controls for**
hes and retarders. (1 000 words & fig.)

---

52 **621** .431 .72 (73)
way Age, June 30, p. 66.
HITTAKER (C.C.) and HUTCHINSON (W.M.). —
000 gross ton-miles per train-hour. (2 400 words & fig.)

Railway Engineering and Maintenance. (Chicago.)

952 **625** .143 .3 (73)
way Engineering and Maintenance, June, p. 570.
ODE (C. J.). — **Supersonic testing of rail ends.**
00 words & fig.)

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952 **625** .143 .2 (73)
way Engineering and Maintenance, June, p. 576.
recision process for **rail-end hardening.** (400 words
g.)

The Railway Gazette. (London.)

952 **621** .335
lway Gazette, May 16, p. 544.
ardan shaft drive for motor bogies. (600 words & fig.)

1952 **625** .17 (494)
Railway Gazette, May 16, p. 545.
Road-rail vehicles for overhead line maintenance. (800 words & fig.)

1952 **621** .438 (42)
Railway Gazette, May 23, p. 572.
Gas-turbine locomotive tests. (1 800 words, tables & fig.)

1952 **621** .132 .6 (42)
Railway Gazette, May 23, p. 577.
British Railways class « 3 » standard tank engine. (1 200 words & fig.)

1952 **621** .132 .1 (61)
Railway Gazette, May 30, p. 600.
Beyer-Garratt locomotives for Benguela Railway. (2 800 words & fig.)

1952 **624** .63 (44)
Railway Gazette, June 6, p. 629.
Reconstruction of the viaduc de la Méditerranée, S. N. C. F. (1 000 words & fig.)

1952 **621** .132 .8 (931)
Railway Gazette, June 6, p. 631.
Oil-burning locomotives for New Zealand. (1 000 words & fig.)

1952 **621** .335 (73)
Railway Gazette, June 13, p. 656.
Pennsylvania Railroad rectifier locomotives. (2 200 words & fig.)

1952 **621** .132 .1 (42)
Railway Gazette, June 13, p. 659.
COOK (K. J.). — **G. W. R. locomotives, 1901-1951.** (2 400 words & fig.)

1952 **656** .225 (44)
Railway Gazette, June 20, p. 685.
Palletisation of stores traffic on the French Railways (2 200 words & fig.)

1952 **621** .438
Railway Gazette, June 27, p. 709.
KOFFMAN (J. L.). — **Efficiency of gas-turbine locomotives.** (3 000 words & fig.)

1952 **625** .232 (62)
Railway Gazette, June 27, p. 717.
Rolling stock for Egyptian State Railways. (1 200 words & fig.)

1952 **621** .132 .1 (944)
Railway Gazette, July 4, p. 12.
Modern standard gauge Beyer-Garratts for New South Wales. (3 800 words & fig.)

1952 **621** .33 (44)
Railway Gazette, July 11, p. 40.
Paris-Lyons electrification completed. (2 000 words & fig.)

1952 **625** .143 .5 (42)
Railway Gazette, July 11, p. 44; July 18, p. 67.
Fastenings for flat-bottom railway track. (3 800 words & fig.)

Diesel Railway Traction. (London.)

1952 **621** .431 .72
Diesel Railway Traction, July, p. 173.
Mekydro hydraulic transmission. (3 200 words & fig.)

1952 **621** .438 (42)
Diesel Railway Traction, July, p. 179.
Tests of British **gas-turbine locomotive.** (2 800 words & fig.)

1952 **621** .438
Diesel Railway Traction, August, p. 197.
Gas-generator locomotive in France. (1 200 words & fig.)

1952 **621** .431 .72 (42)
Diesel Railway Traction, August, p. 213.
BOWLER (J. E.). — Series-parallel control *(to be continued)*. (3 000 words & fig.)

Railway Mechanical and Electrical Engineer. (New York.)

1952 **625** .2 (0 (73)
Railway Mechanical and Electrical Engineer, July, p. 67.
Dynamic testing of freight cars. (4 200 words & fig.)

1952 **625** .25 (73)
Railway Mechanical and Electrical Engineer, July, p. 72.
MACFARLANE (C. E.). — **Air brake corrosion problems.** (3 200 words & fig.)

In Spanish

Boletin de la Asociación permanente del Congreso Panamericano de Ferrocarriles. (Buenos-Aires.)

1952 **621** .132 .7 & **621** .431 .72
Boletin de la Asoc. perman. del Congreso Panameric. de Ferrocarriles, mayo-junio, p. 19.
CAPPA (A.). — **Locomotoras de maniobras.** (3 000 palabras.)

1952 **385** .4 (82)
Boletin de la Asoc. perman. del Congreso Panameric. de Ferrocarriles, mayo-junio, p. 33.
DAGNINO PASTORE (L.) & DONALDSON (M.-S). **Planificación y racionalización del sistema ferroviario argentino.** (10 000 palabras.)

Hormigón elastico. (Buenos-Aires.)

1952
Hormigón elastico, mayo, p. 5; junio, p. 3.
BILLIG (K.). — **Hormigón precomprimido.** (10[illegible] palabras & fig.)

1952
Hormigón elastico, julio, p. 3 et suiv.
SMET (U.). — **Nuevo sistema de anclaje de armadi[illegible] estiradas.** Sistema Franki-Smet. (2 000 palabras & figg
LEE (Donovan H.). — Nuevo desarollo del **hormi[illegible] elastico.** (1 000 palabras & fig.)
MEYERS (S. L.). — Como afectan la **durabilidad[illegible] hormigon** los cambios de temperatura y de humed (3 000 palabras, tablas & fig.)

Revista de Obras Publicas. (Madrid.)

1952 **625** .14[illegible]
Revista de Obras publicas, Junio, p. 233.
LAFITTE (C.). — **Juntas paralelas y juntas alterna[illegible]** en las vias ferroviarias. (2 000 palabras & fig.)

1952 **621** .431 .72 (4[illegible]
Revista de Obras publicas, Julio, p. 289.
Nuevos trenes TAF (trenes automotores F[illegible] adquiridos por la RENFE para mejorar sus servic de viajeros. (800 palabras & fig.)

1952 **656**
Revista de Obras publicas, Agosto, p. 333; septiembl p. 389.
Algunos datos sobre **tarifas ferroviarias.** (4 000 palab & 6 cuadros.)

In Italian.

Giornale del Genio Civile. (Roma.)

1952 **6**
Giornale del Genio Civile, giugno, p. 307.
LEVI (F.). — Recenti sviluppi del **cemento arma precompresso** nel campo degli studi e delle applicazio (6 000 parole.)

1952 **624** .2 & **6**
Giornale del Genio Civile, giugno, p. 316.
RINALDI (G.). — Proporzionamento, costruzione comportamento alla compressione, alla fessurazione alla rottura di **una trave isostatica in cemento arma precompresso** a doppio ginocchio. (6 000 parole & fig.)

Ingegneria ferroviaria. (Roma.)

1952 **721**
Ingegneria ferroviaria, giugno, p. 433.
MARESCA (G.). — Su una cellula dinamometri per la **misura delle pressioni in terreni sciolti.** (4 000 par & fig.)

621 .332
neria ferroviaria, giugno, p. 441.
ULCO (V.) & MAZZOLA (C.). — **Possibilità di ittenti esclusioni dal servizio delle sottostazioni** che ntano una linea di contatto, per realizzare economie rgia. (2 500 parole & fig.)

---

621 .131
neria ferroviaria, giugno, p. 447.
LESE (A.). — Possibilità di **ammodernamento delle otive a vapore.** (5 000 parole & fig.)

---

656 .211 .5
neria ferroviaria, giugno, p. 456.
RCHIO (F.). — **Meccanizzazione delle biglietterie.**) parole & fig.)

---

621 .333 & 621 .431 .72
neria ferroviaria, giugno, p. 461.
TTONI (T.). — **Potenze e prestazioni dei motori di ne.** (1 200 parole.)

---

656 .235 (45)
neria ferroviaria, giugno, p. 469.
QUINI (G.). — Proposte per nuove basi di **tariffa enziale** ad andamento iperbolico per trasporto di sulla rete delle F. S. (2 500 parole & fig.)

Politica dei Trasporti. (Roma.)

656 .225 & 656 .261
ica dei Trasporti, n° 11, marzo, p. 97.
LMIERI (G. C.). — Nuovo orientamento nella ca dei trasporti. Le **casse mobili.** (2 500 parole .)

---

656 .1 & 656 .2
ica dei Trasporti, n° 11, marzo, p. 109.
EL VISCOVO (M.). — **Trasporti ferroviari ed trasporti.** (4 000 parole.)

---

656 (45)
ica dei Trasporti, n° 12, aprile, p. 145.
REVESANI (R.). — Problemi di attuazione dell' **namento regionale nel settore dei trasporti terrestre.** 00 parole).

Trasporti Pubblici. (Roma.)

656 .257
sporti Pubblici, dicembre, p. 1 349.
IRENEI (M.). — Recenti progressi nella tecnica e **teletrasmissioni per il comando centralizzato di arecchiature ferroviarie.** (3 500 parole & fig.)

---

385 (09 (84)
sporti Pubblici, dicembre, p. 1 385.
errovie e strade in Bolivia. (800 parole & fig.)

1952 656 .234 (45)
Trasporti Pubblici, febbraio, p. 173.
ZAQUINI (G.). — Proposte per la formazione di **nuove basi di tariffa chilometrica ad andamento differenziale « iperbolico » per viaggiatori.** (2 000 parole & fig.)

1952 621 .33 (492) & 621 .431 .72 (492)
Trasporti Pubblici, febbraio, p. 201.
Trazione elettrica e diesel-elettrica sulle Ferrovie olandesi. (3 000 parole & fig.)

1952 388 (73)
Traspori Pubblici, marzo, p. 313.
GENTILI (A.). — **I trasporti pubblici** nelle maggiori città degli Stati Uniti. (4 000 parole & fig.)

1952 621 .431 .72 (42)
Trasporti Pubblici, marzo, p. 331.
Una **nuova locomotiva diesel-meccanica** a 4 assi accoppiati. (1 000 parole & fig.)

In Netherlands.

Spoor- en Tramwegen. (Utrecht.)

1952 621 .33 (492)
Spoor- en Tramwegen, nr 16, 7 Augustus, p. 257; nr 17, 21 Augustus, p. 275; nr 18, 4 September, p. 300; nr 19, 18 September, p. 314; nr 20, 2 October, p. 327.
JORDENS (E.). — De **electrificatie** na de bevrijding. *(Wordt vervolgd.)* (6 000 woorden & fig.)

1952 656 .254 (44)
Spoor- en Tramwegen, nr 16, 7 Augustus, p. 259.
FLIPSE (J. L.). — **Centrale dienstleiding** op het baanvak Blaisy-Bas-Dijon. (2 000 woorden & fig.)

1952 621 .33
Spoor- en Tramwegen, nr 17, 21 Augustus, p. 281.
VAN DORSSER KEUS (J. A.). — **Waarom electrificeeren?** (1 500 woorden & fig.)

1952 625 .2 (0
Spoor- en Tramwegen, nr 18, 4 September, p. 291.
ROOZEVELD VAN DER VEN (A. F.). — **Niet afgeverde constructies in verticale zin** t. o. v. de spoorstaaf bij railvoertuigen. (2 000 woorden & fig.)

1952 656 .225 (492)
Spoor- en Tramwegen, nr 18, 4 September, p. 294; nr 19, 18 September, p. 310; nr 20, 2 October, p. 326.
ROBBÉ GROSKAMP (H. A.). — **Stukgoederen in Nederland.** Transport — Palletisering — Verpakking. (4 000 woorden & fig.)

M. Weissenbruch & Co., Ltd., Printer to the King, 49, rue du Poinçon, Bruxelles.

NALYTICAL TABLE OF ARTICLES

ARRANGED ACCORDING TO THE DECIMAL CLASSIFICATION

(1952)

	Month.	Pages
SOCIOLOGY IN GENERAL.		
STATISTICS.		
stical Yearbook 1949-1950 *(New Book)*	July	590
stical Yearbook 1951 *(New Book)*	August	646
COMMERCE. COMMUNICATIONS.		
RAILWAYS FROM A GENERAL, ECONOMIC AND FINANCIAL POINT F VIEW.		
Nacional de los Ferrocarriles españoles. — Desarrollo de su Plan general de econstrucción *(The Spanish National Railways. — Development of their general construction plan) (New Book)*	February	144
nomic aspects of : *a)* discontinuing service on old railway lines; *b)* construction of ew railway lines, with regard to the possibility of handling transport with other means. Question III, Enlarged Meeting of the Permanent Commission, Stockholm, 1952) :		
Report (Austria, Belgium and Colony, Bulgaria, Czechoslovakia, France and Overseas Territories, Greece, Hungary, Italy, Luxemburg, Netherlands, Poland, Portugal and Colonies, Rumania, Switzerland, Turkey and Yugoslavia), by G. MOULART	March	147
Report (America [North and South], Australia [Commonwealth of], Burma, China, Ceylon Denmark, Egypt, Finland, India, Irak, Iran, Irish Free State, New Zealand, Norway, Pakistan, South Africa, Sudan, Sweden, United Kingdom of Great Britain and Northern Ireland and the territories for whose international relations the United Kingdom is responsible), by Arne SJÖBERG	March April June	210 235 519
Special Report, by Arne SJÖBERG	November	798
Summary of sectional proceedings	»	826
Procedings in plenary meeting and	»	838
Final Summaries		
5 (02. Railway handbooks, treatises, etc.		
rectory of Railway Officials & Year Book 1952-1953 *(New Book)*	October	748
5 (05. Periodicals.		
T.R., Eisenbahntechnische Rundschau *(Technical Railway Review) (New Book)*	August	646
35 (06. Societies, associations, scientific congresses.		
5 (06 .111. International Railway Congress Association. Official documents.		
fficial information issued by the Permanent Commission of the International Railway Congress Association :		
Meeting of the Permanent Commission, held on the 1st March 1952. (*Appendix :* List of Members of the Permanent Commission of the International Railway Congress Association)	May	487
Final Summaries adopted at the Enlarged Meeting of the Permanent Commission at Stockholm (9th to 12th June 1952)	July	575
Meetings held by the Permanent Commission at Stockholm (9th to 11th June 1952)	November	754

	Month.	Page
385 (08. Annual reports of railway companies and administrations.		
Malayan Railway Administration Report for the Year 1950, by J.O. SANDERS *(New Book)*.	July	59
385 (09. History, description of railways, etc.		
Unification of British Railways. — Administrative principles and practice *(New Book)*	February	139
Géographie Universelle des Transports. Tome I : Géographie des Chemins de fer français. Volume IV : France Lointaine *(Universal Geography of Transport.* Volume I : *Geography of the French Railways.* Part IV : *Overseas France)*, by H. LARTILLEUX *(New Book)*.	»	142
World Railways 1950-1951 *(New Book)*	July	589
385 (09. 2. Obituary notices.		
Obituary :		
Axel GRANHOLM	January	75
Germain WILLAERT	July	586
385 .1. Railways from a financial point of view.		
385 .11. Cost of construction and revenue derived.		
385 .113. Result of working. Expenditure. Gross and net earnings. Ratio of expenditure to earnings.		
Red Nacional de los Ferrocarriles Españoles. — Proyecto de Memoria del Consejo de Administración. Ejercicio de 1950 *(Spanish National Railways. — Project of report of the Administrative Council. Year 1950) (New Book)*	October	751
385 .5. Staff.		
The co-ordination of transport : Work problems *(New Book)*	July	591
5. NATURAL SCIENCES.		
53. PHYSICS.		
536. HEAT. THERMODYNAMICS.		
IVth International Congress of industrial heating	»	588
6. USEFUL ARTS.		
Répertoire des Organisations Scientifiques Internationales *(List of International Scientific Organizations) (New Book)*	February	146
62. ENGINEERING.		
621. MECHANICAL AND ELECTRICAL ENGINEERING.		
621 .1. Steam engineering.		
621 .13. Locomotive engines.		
621 .132. Class of locomotives.		
621 .132 .1 (09. Class of locomotives in different countries. History.		
Locomotive and train working in the latter part of the nineteenth century, by E.L. AHRONS *(New Book)*	July	589

	Month.	Pages.
2 .8. Special types.		
otives using high caloric value synthetic gas (« rich gas »), by Dr. Eng. MEINEKE	February	123
35. Vehicle.		
5 (01. Vehicle. Theory.		
errors and paradoxical truths relative to hunting movement, by Robert LÉVI. .	October	723
35 .2. Wheels, axle boxes and straight axles. Oiling the wheels, etc.		
w rail lubricator of the French National Railways (S.N.C.F.), by M. LAFAYE and VORBURGER	August	595
hardening of locomotive tyres	September	696
3. Electrical engineering.		
39. Miscellaneous uses of electricity.		
92. Welding.		
nts to some welded bridges under very low temperature conditions, by J. DUBUS	August	609
4. Air, gas and oil engines.		
43. Ignited-gas engines. Internal combustion engines.		
431. General.		
31 .7. Various applications.		
31 .72. Railway traction.		
ew Breda railcars, type ALn 880, by Dr.-Ing. FRANCO SILVANO OREFICE. .	»	625
ell locomotive of British Railways	September	686
433. Gas engines.		
notives using high caloric value synthetic gas (« rich gas »), by Dr. Eng. MEINEKE	February	123
438. Gas turbines.		
n-built gas-turbine locomotive	October	738
BRIDGES AND ROOFS.		
ents to some welded bridges under very low temperature conditions, by J. DUBUS	August	609
s utilizables para el posible estudio de una nueva instruccion para el calculo de mos metalicos *(Data to serve as a basis for the study of a new instruction on the culation of metal bridges)*, by D. MENDIZABAL Y FERNANDEZ *(New Book)*	»	647
.2. Girders. Stresses and strains.		
rs embedded in concrete for composite structures, by Dr.-Ing. Hugo NEUFFER	September	691

	Month.	Page
625. RAILWAY AND ROAD ENGINEERING.		
625 .1. Railway engineering. Way and works.		
625 .11. Scheme for a railway.		
625 .113. Longitudinal section. Gradients. Curves.		
Transition curves, by J. CHAPPELLET	July	53
625 .14. Permanent way.		
625 .14 (01. Theory. General matters.		
Calculation of bars of infinite length on resilient bearings, with notes on the depression given to a bearing by loading another bearing, by Ir. W.J. VAN DER EB and Dr. Ir. A.D. DE PATER	January	
Stresses in Railway Track, by V. VENKATARAMAYYA *(New Book)*	February	14
Certification of permanent way and track inspection trolley, by Henri SCHMITZ. . . .	September	67
The geometrical conditions of the contact between rail and wheel, by M. BOUTELOUP	October	69
625 .143 .3. Wear and breaking of rails.		
The new rail lubricator of the French National Railways (S.N.C.F.), by M. LAFAYE and M. VORBURGER	August	59
Supersonic testing of rail ends, bij C. J. CODE	December	87
625 .162. Fencing and level crossing gates. Boundaries.		
A. What are the new safety measures taken for level crossing of railway tracks by the road in respect of the density, high tonnage and speed of the road traffic? *B.* Cases of level crossing of railway tracks by a road with a railway (urban or suburban) running alongside. (Question I, Enlarged Meeting of the Permanent Commission, Stockholm, 1952) :		
Report (America [North and South], Australia [Commonwealth of], Burma, China, Ceylon, Egypt, India, Irak, Iran, Irish Free State, New Zealand, Pakistan, South Africa, Sudan, United Kingdom of Great Britain and Northern Ireland and the territories for whose international relations the United Kingdom is responsible), by G. MATTHEWS and S. WILLIAMS	March	17
Report (Austria, Belgium and Colony, Bulgaria, Czechoslovakia, Denmark, Finland, France and Overseas Territories, Western Germany, Greece, Hungary, Italy, Luxemburg, Netherlands, Norway, Poland, Portugal and Colonies, Rumania, Spain, Sweden, Switzerland, Syria, Turkey and Yugoslavia), by A DONIZEAU	May	34
Special report, by A. DONIZEAU	June	49
Supplement to report, by A. DONIZEAU	»	52
Summary of sectional proceedings	November	76
Proceedings in plenary meeting and	»	82
Final Summaries	»	82
625 .172. Current maintenance.		
Certification of permanent way and track inspection trolley, by H. SCHMITZ	September	67
How track is raised and reballasted in Sweden, by TORD FOGELBERG	December	86

	Month.	Pages.
. Railway rolling stock.		
(01. General description.		
ometrical conditions of the contact between rail and wheel, by M. BOUTELOUP	October	699
1. Principal parts of the vehicle.		
12. Axles. Wheels. Tyres.		
heels dynamically balanced at Burnside shops	December	872
15. Bogies and Bissel bogies. etc.		
nt pads add to comfort on passenger cars, by F.J. CARTY	August	639
hmy » in passenger-car trucks	December	861
23. Passenger carriages.		
resent position as regards construction of passenger coaches on the German Federal lways, by Rudolf KÖRNER	»	841
236. Passenger carriages. Cleaning.		
tions on the cleaning of the outside of railway coaches	»	870
.25. Brakes.		
driver's brake valves and distributors for modern locomotives and motor coaches, S. KELLER	August	612
.251. General.		
ng of Diesel rail vehicles. Results of tests and a review of experiences with different tems, by George W. McARD.	»	615
.28. Traction rolling stock.		
Locomotives des Chemins de fer français, à vapeur, électriques, Diesel-électriques et autorails *(The locomotives of the French Railways, steam, electric, Diesel-electric and railcars) (New Book)*.	»	645
Bergsteigefähigkeit und Literleistung *(Climbing capacity and power per litre)*, by Dr. Eng. FLÖSSEL *(New Book)*	October	748
TELEGRAPHY. RADIO.		
chritte der Funktechnik und ihrer Grenzgebiete *(Progress in radio technique and allied lds)*, by H. RICHTER *(New Book)*	»	749
. TRANSPORT BY ROAD, RAIL, ETC.		
co-ordination of transport : Work problems *(New Book)*	July	591

	Month.	Page
656 (06. Societies, Associations. etc.		
Centenaire de l'Association des Ingénieurs sortis de l'Ecole de Liège (A.I.Lg.), Congrès 1947. Section Transports *(Centenary of the Association of Engineering Graduates of Liege School [A.I.Lg.], 1947 Congress. Transport Section) (New Book)*	February	14
656 .1. Carriage by road.		
Strada e Rotaie. La realta della situazione secondo le statistiche del Ministero dei Trasporti *(Road and Rail. The true situation according to the statistics of the Ministry of Transport) (New Book)*	»	14
656 .2. Carriage by railway. Railway working.		
Strada e Rotaie. La realta della situazione secondo le statistiche del Ministero dei Trasporti *(Road and Rail. The true situation according to the statistics of the Ministry of Transport) (New Book)*	»	14
656 .212. Goods station arrangements.		
Five acres under one roof... Modern freighthouse at St-Louis	July	562
656 .212 .5. Marshalling lines.		
Rangiertechnik *(Marshalling yard technique)*, Special number of the *Eisenbahn Technische Rundschau (E.T.R.) (New Book)*	October	750
656 .225. Goods services.		
What are the quickest and most economical means to carry out door to door service for railway transports? What are the best conditions of use of containers for small miscellaneous traffic (dimensions of the containers, conditions of ownership, tariffs)? What are the packing types to be recommended? (Question II : Enlarged Meeting of the Permanent Commission, Stockholm, 1952) :		
Report (English speaking countries), by Dr. M.G. DE BRUIN	February	79
Report (Austria, Belgium and Colony, Bulgaria, Czechoslovakia, Denmark, France and Colonies, Finland, Western Germany, Greece, Hungary, Italy, Luxemburg, Netherlands and Colonies, Norway, Poland, Portugal and Colonies, Rumania, Spain, Sweden, Switzerland, Turkey and Yugoslavia), by F. SAUVAGEAT. .	May	397
Special report, by F. SAUVAGEAT	June	507
Summary of sectional proceedings	November	786
Proceedings in plenary meeting and	»	826
Final Summaries.	»	834
The new large containers service of the German Railways	July	551
656 .232. Costs of carriage and importance of traffic.		
Marginal costs — a 40-year old management tool for rate fixing on the Swedish State Railways, by Arne SJÖBERG	January	51

	Month.	Pages.
. Safety measures signals.		
lème de la signalisation ferroviaire et sa solution rationnelle *(The problem of y signalling and its rational solution)*, by R. TUOT *(New Book)*	February	143
54. Apparatus for communicating information at long distances. etc.		
t are the new safety measures taken for level crossing of railway tracks by the n respect of the density, high tonnage and speed of the road traffic? *B.* Cases of crossing of railway tracks by a road with a railway (urban or suburban) running side. (Question I; Enlarged Meeting of the Permanent Commission, Stockholm, :		
Report (America [North and South], Australia [Commonwealth of], Burma, China, Ceylon, Egypt, India, Irak, Iran, Irish Free State, New Zealand, Pakistan, South Africa, Sudan, United Kingdom of Great Britain and Northern Ireland and the territories for whose international relations the United Kingdom is responsible), by G. MATTHEWS and S. WILLIAMS	March	177
Report (Austria, Belgium and Colony, Bulgaria, Czechoslovakia, Denmark, Finland, France and Overseas Territories, Western Germany, Greece, Hungary, Italy, Luxemburg, Netherlands, Norway, Poland, Portugal and Colonies, Rumania, Spain, Sweden, Switzerland, Syria, Turkey and Yugoslavia), by A. DONIZEAU	May	343
Special report, by A. DONIZEAU	June	493
Supplement to report, by A. DONIZEAU	»	529
Summary of sectional proceedings	November	769
Proceedings in plenary meeting and.	»	826
Final Summaries	»	829
57. Combined working of signals and points.		
gnalling installation at Soignies station, by L. DEVILLERS	September	649
6. Accessory services.		
61. Collection and delivery.		
are the quickest and most economical means to carry out door to door service railway transports? What are the best conditions of use of containers for small ellaneous traffic (dimensions of the containers, conditions of ownership, tariffs)? t are the packing types to be recommended? (Question II; Enlarged Meeting of Permanent Commission, Stockholm, 1952) :		
Report (English speaking countries), by Dr. M.G. DE BRUIN	February	79
Report (Austria, Belgium and Colony, Bulgaria, Czechoslovakia, Denmark, France and Colonies, Finland, Western Germany, Greece, Hungary, Italy, Luxemburg, Netherlands and Colonies, Norway, Poland, Portugal and Colonies, Rumania, Spain, Sweden, Switzerland, Turkey and Yugoslavia), by F. SAUVAGEAT . .	May	397
Special report, by F. SAUVAGEAT	June	507
Summary of sectional proceedings	November	786
Proceedings in plenary meeting and	»	826
Final Summaries	»	834
ew large containers service of the German Railways	July	551

	Month.	Pa
656 .28. Accidents.		
656 .281. Derailments.		
Report on derailments, by W.G. LATHAM and E.W. ISAACS *(New Book)*	July	5
669. METALLURGY AND ESSAYING.		
Ultrasonic equipment for metal flow detection	»	5
69. BUILDING.		
691. MATERIALS. PROCESSES. PRESERVATIVES.		
Girders embedded in concrete for composite structures, by H. NEUFFER	September	6

CONTENTS

OF THE

29th YEAR OF THE ENGLISH EDITION.

	Pages.	Numbers of the decimal classification
No. 1. — JANUARY 1952.		
culation of bars of infinite length on resilient bearings, with notes on the depression en to a bearing by loading another bearing, by Ir. W. J. VAN DER EB and Dr. Ir. D. DE PATER	1	**625** .14 (01
rginal costs — a 40-year old management tool for rate fixing on the Swedish State lways, by Arne SJÖBERG	51	**626** .232 (485)
TUARY :		
el GRANHOLM	75	**385** (09 .2
NTHLY BIBLIOGRAPHY OF RAILWAYS	1	**016** .385 (02
No. 2. — FEBRUARY 1952.		
at are the quickest and most economical means to carry out door to door service railway transports? What are the best conditions of use of containers for small ellaneous traffic (dimensions of the containers, conditions of ownership, tariffs)? at are the packing types to be recommended? (Question II : *Enlarged Meeting of Permanent Commission, Stockholm, 1952*). Report *(English speaking countries)*, by M. G. DE BRUIN	79	**656** .225 & **656** .261
omotives using high caloric value synthetic gas (« rich gas »), by Dr. Eng. MEINEKE	123	621 .132 .8 (43) & 621 .433 (43)
V BOOKS AND PUBLICATIONS :		
fication of British Railways. — Administrative principles and practice	139	**385** (09 (42)
esses in Railway Track, by V. VENKATARAMAYYA	140	**625** .14 (01
tenaire de l'Association des Ingénieurs sortis de l'Ecole de Liège (A.I.Lg.), Congrès 7. Section Transports *(Centenary of the Association of Engineering Graduates of Liege ool (A.I.Lg.), 1947 Congress. Transport Section)*	141	**656** (06
ographie Universelle des Transports. Tome I : **Géographie des Chemins de fer fran-**. Volume IV : **France Lointaine** *(Universal Geography of Transport.* Volume I : *graphy of the French Railways.* Part IV : *Overseas France)*, by H. LARTILLEUX	142	**385** (09 (5 + 6)
problème de la signalisation ferroviaire et sa solution rationnelle *(The problem of way signalling and its rational solution)*, by R. TUOT	143	**656** .25
l Nacional de los Ferrocarriles españoles. — Desarrollo de su Plan general de construcción *(The Spanish National Railways. — Development of their general onstruction plan)*	144	**385** (460)
ada e Rotaie. La realta della situazione secondo le statistiche del Ministero dei asporti *(Road and Rail. The true situation according to the statistics of the Ministry Transport)*	145	656 .1 (45) & 656 .2 (45)
pertoire des Organisations Scientifiques Internationales *(List of International Scientific ganizations)*	146	**6**
ONTHLY BIBLIOGRAPHY OF RAILWAYS	13	**016** .385 (02

	Pages.	Numbers of the decimal classificati
No. 3. — MARCH 1952.		
I. **Economic aspects of : a) discontinuing service on old railway lines; b) construction of new railway lines, with regard to the possibility of handling transport with other means.** (Question III, Enlarged Meeting of the Permanent Commission, Stockholm, 1952). Report *(Austria, Belgium and Colony, Bulgaria, Czechoslovakia, France and Overseas Territories, Greece, Hungary, Italy, Luxemburg, Netherlands, Poland, Portugal and Colonies, Rumania, Switzerland, Turkey and Yugoslavia)*, by G. MOULART	147	**385**
II. **A) What are the new safety measures taken for level crossing of railway tracks by the road in respect of the density, high tonnage and speed of the road traffic? B) Cases of level crossing of railway tracks by a road with a railway (urban or suburban) running alongside.** (Question I, Enlarged Meeting of the Permanent Commission, Stockholm, 1952). Report *(America [North and South], Australia [Commonwealth of], Burma, China, Ceylon, Egypt, India, Irak, Iran, Irish Free State, New Zealand, Pakistan, South Africa, Sudan, United Kingdom of Great Britain and Northern Ireland and the territories for whose international relations the United Kingdom is responsible)*, by G. MATTHEWS and S. WILLIAMS	177	**625 .162 & 656**
III. **Economic aspects of : a) discontinuing service on old railway lines; b) construction of new railway lines, with regard to the possibility of handling transport with other means.** (Question III, Enlarged Meeting of the Permanent Commission, Stockholm, 1952). Report *(America [North and South], Australia [Commonwealth of], Burma, China, Ceylon, Denmark, Egypt, Finland, India, Irak, Iran, Irish Free State, New Zealand, Norway, Pakistan, South Africa, Sudan, Sweden, United Kingdom of Great Britain and Northern Ireland and the territories for whose international relations the United Kingdom is responsible), (to be continued)*, by Arne SJÖBERG	201	**385**
No. 4. — APRIL 1952.		
I. **Economic aspects of : a) discontinuing service on old railway lines; b) construction of new railway lines; with regard to the possibility of handling transport with other means.** (Question III, Enlarged Meeting of the Permanent Commission, Stockholm, 1952). Report *(America [North and South], Australia [Commonwealth of], Burma, China, Ceylon. Denmark, Egypt, Finland, India, Irak, Iran, Irish Free State, New Zealand, Norway, Pakistan, South Africa, Sudan, Sweden, United Kingdom of Great Britain and Northern Ireland and the territories for whose international relations the United Kingdom is responsible), (continuation and end)*, by Arne SJÖBERG	235	**385**
No. 5. — MAY 1952.		
I. **A) What are the new safety measures taken for level crossing of railway tracks by the road in respect of the density, high tonnage and speed of the road traffic? B) Cases of level crossing of railway tracks by a road with a railway (urban or suburban) running alongside.** (Question I, Enlarged Meeting of the Permanent Commission, Stockholm, 1952). Report *(Austria, Belgium and Colony, Bulgaria, Czechoslovakia, Denmark, Finland, France and Overseas Territories, Western Germany, Greece, Hungary, Italy, Luxemburg, Netherlands, Norway, Poland, Portugal and Colonies, Rumania, Spain, Sweden, Switzerland, Syria, Turkey and Yugoslavia)*, by A. DONIZEAU	343	**625 .162 & 656**

	Pages.	Numbers of the decimal classification.
No. 5. — MAY 1952 *(continued).*		
: are the quickest and most economical means to carry out door to door service ailway transports? What are the best conditions of use of containers for small ellaneous traffic (dimensions of the containers, conditions of ownership, tariffs)? t are the packing types to be recommended? (Question II, Enlarged Meeting of the anent Commission, Stockholm, 1952). Report *(Austria, Belgium and Colony, aria, Czechoslovakia, Denmark, France and Colonies, Finland, Western Germany, ce, Hungary, Italy, Luxemburg, Netherlands and Colonies, Norway, Poland, gal and Colonies, Rumania, Spain, Sweden, Switzerland, Turkey and Yugoslavia),* F. SAUVAGEAT	397	**656** .225 & **656** .261
CIAL INFORMATION ISSUED BY THE PERMANENT COMMISSION OF THE INTERNATIONAL LWAY CONGRESS ASSOCIATION. — **Meeting of the Permanent Commission, held on 1st March 1952.** (*Appendix :* List of Members of the Permanent Commission the International Railway Congress Association.)	487	**385** (06 .111
No. 6. — JUNE 1952.		
cial accounts summing up the Reports on the questions for discussion at the Enlarged eting of the Permanent Commission of the International Railway Congress Association ckholm, 1952) :		
Section I. — WAY AND WORKS.		
QUESTION I. — **A) What are the new safety measures taken for level crossing of way tracks by the road in respect of the density, high tonnage and speed of the road ffic? B) Cases of level crossing of railway tracks by a road with a railway (urban suburban) running alongside,** by A. DONIZEAU	493	**625** .162 & **656** .254
Section III. — WORKING.		
QUESTION II. — **What are the quickest and most economical means to carry out or to door service for railway transports? What are the best conditions of use of ntainers for small miscellaneous traffic (dimensions of the containers, conditions of nership, tariffs)? What are the packing types to be recommended?** by F. SAUGEAT	507	**656** .225 & **656**. 261
Section IV. — GENERAL.		
QUESTION III. — **Economic aspects of : a) discontinuing service on old railway lines; construction of new railway lines; with regard to the possibility of handling transport h other means,** by Arne SJÖBERG	519	**385**
What are the new safety measures taken for level crossing of railway tracks by the ad in respect of the density, high tonnage and speed of the road traffic? B) Cases level crossing of railway tracks by a road with a railway (urban or suburban) running ngside. (Question I, Enlarged Meeting of the Permanent Commission, Stockholm, 52), Supplement to Report, by A. DONIZEAU	529	**625** .162 & **656**. 254
No. 7. — JULY 1952.		
Transition curves, by J. CHAPPELLET	533	**625** .113
The new large containers service of the German Railways	551	656 .225 (43) & 656 .261 (43)
Five acres under one roof... Modern freighthouse at St-Louis.	562	**656** .212 (73)

		Pages.	Numbers of the decimal classifica
	No. 7. — JULY 1952 *(continued).*		
IV.	**Ultrasonic equipment for metal flow detection**	571	**669**
V.	OFFICIAL INFORMATION issued by the Permanent Commission of the International Railway Congress Association :		
	Final Summaries adopted at the Enlarged Meeting of the Permanent Commission at Stockholm (9th to 12th June 1952)	575	**385** (06 .111
VI.	OBITUARY : Germain WILLAERT	586	**385** (09 .2
VII.	**IVth International Congress of industrial heating**	588	**536** .06 (44)
VIII.	NEW BOOKS AND PUBLICATIONS :		
	Locomotive and train working in the latter part of the nineteenth century, by E. L. AHRONS	589	**621** .132 .1 (0
	World Railways 1950-1951	589	**385** (09 (3)
	Statistical Yearbook 1949-1950	590	**31** (3)
	The co-ordination of transport : Work problems	591	**385** .5 & **656**
	Report on derailments, by W.G. LATHAM and E.W. ISAACS	592	**656** .281 (54)
	Malayan Railway Administration Report for the Year 1950, by J.O. SANDERS	593	**385** (08 (59)
IX.	MONTHLY BIBLIOGRAPHY OF RAILWAYS	23	**016** .385 (02
	No. 8. — AUGUST 1952.		
I.	**The new rail lubricator** of the French National Railways (S.N.C.F.), by M. LAFAYE and M. VORBURGER	595	621 .135 .2 (44) & 625 .143 .3
II.	**Accidents to some welded bridges** under very low temperature conditions, by J. DUBUS	609	**621** .392 & **624**
III.	**New driver's brake valves and distributors** for modern locomotives and motor coaches, by S. KELLER	612	**625** .25
IV.	**Braking of Diesel rail vehicles.** Results of tests and a review of experiences with different systems, by GEORGE W. MCARD	615	**625** .251
V.	**The new Breda railcars, type ALn 880,** by Dr.-Ing. FRANCO SILVANO OREFICE	625	**621** .431 .72 (4
VI.	**Resilient pads add to comfort on passenger cars,** by F. J. CARTY	639	**625** .215 (73)
VII.	NEW BOOKS AND PUBLICATIONS :		
	Locomotives des Chemins de fer français, à vapeur, électriques, Diesel-électriques et autorails *(The locomotives of the French Railways, steam, electric, Diesel-electric and railcars)*	645	**625** .28 (44)
	Statistical Yearbook 1951	646	**31** (3)

	Pages.	Numbers of the decimal classification.
No. 8. — AUGUST 1952 *(continued)*.		
R, Eisenbahntechnische Rundschau *(Technical Railway Review)*	646	**385** (05 (43)
tos utilizables para el posible estudio de una nueva instruccion para el calculo tramos metalicos *(Data to serve as a basis for the study of a new instruction on calculation of metal bridges)*, by D. MENDIZABAL Y FERNANDEZ	647	**624** (460)
ONTHLY BIBLIOGRAPHY OF RAILWAYS	33	**016** .385 (02
No. 9. — SEPTEMBER 1952.		
signalling installation at Soignies station, by L. DEVILLERS	649	**656** .257 (493)
lers embedded in concrete for composite structures, by Dr. Ing. Hugo NEUFFER . .	671	**624** .2 & **691**
ification of permanent way and track inspection trolley, by Henri SCHMITZ . . .	675	625 .14 (01 & 625 .172
Fell locomotive of British Railways	686	**621** .431 .72 (42)
ne-hardening of locomotive tyres	696	**621** .135 .2
NTHLY BIBLIOGRAPHY OF RAILWAYS	45	**016** .385 (02
No. 10. — OCTOBER 1952.		
geometrical conditions of the contact between rail and wheel, by M. BOUTELOUP . . .	699	625 .14 (01 & 625 .2 (01
le errors and paradoxical truths relative to hunting movement, by Robert LÉVI . . .	723	**621** .135 (01
sh-built gas-turbine locomotive	738	**621** .438 (42)
Y BOOKS AND PUBLICATIONS :		
ctory of Railway Officials & Year Book 1952-1953	748	**385** (02
steigefähigkeit und Literleistung *(Climbing capacity and power per litre)*, by Dr. Eng. SSEL	748	**625** .28
schritte der Funktechnik und ihrer Grenzgebiete *(Progress in radio technique and d fields)*, by H. RICHTER	749	**654**
giertechnik *(Marshalling yard technique)*, Special number of the *Eisenbahn Technische dschau (E. T. R.)*	750	**656** .212 .5 (43)
Nacional de los Ferrocarriles Españoles. — Proyecto de Memoria del Consejo de inistración. Ejercicio de 1950. *(Spanish National Railways. — Project of Report of Administrative Council. Year 1950)*	751	**385** .113 (460)
npetition for new designs of track brakes, organized by the German Ministry of nsport	752	. . .
NTHLY BIBLIOGRAPHY OF RAILWAYS	57	**016** .385 (02

	Pages.	Numbers of the decimal classific
No. 11. — NOVEMBER 1952.		
ENLARGED MEETING OF THE PERMANENT COMMISSION OF THE INTERNATIONAL RAILWAY CONGRESS ASSOCIATION AT STOCKHOLM (9th to 11th June 1952) :		
Official information issued by the Permanent Commission of the International Railway Congress Association :		
Meetings held by the Permanent Commission in Stockholm (9th to 11th June 1952)	754	**385** (06 .111
Appendix 1 : List of Members of the Permanent Commission.	759	. . .
Appendix 2 : List of Participants to the Stockholm Meeting	762	. . .
Appendix 3 : List of questions selected for the Agenda of the XVIth Session	767	. . .
Summary of Sectional Proceedings :		
SECTION I : WAY AND WORKS.		
Question I : A. **What are the new safety measures taken for level crossing of railway tracks by the road in respect of the density, high tonnage and speed of the road traffic?**		
B. **Cases of level crossing of railway tracks by a road with a railway (urban or suburban) running alongside**	769	**625** .162 & 656
SECTION III : WORKING.		
Question II : **What are the quickest and most economical means to carry out door to door service for railway transports? What are the best conditions of use of containers for small miscellaneous traffic (dimensions of the containers, conditions of ownership, tariffs)? What are the packing types to be recommended**	786	**656** .225 & 656
SECTION IV : GENERAL.		
Question III : **Economic aspects of** : a) **discontinuing service on old railway lines**; b) **construction of new railway lines, with regard to the possibility of handling transport with other means**	798	**385**
Plenary Meeting held on the 11th June 1952. Proceedings	826	385, 625 .162, 656 656 .225 & 656 .2
Appendix : Final Summaries :		
Question I	829	**625** .162 & 656
Question II	834	**656** .225 & 656
Question III	838	**385**
No. 12. — DECEMBER 1952.		
I. **The present position as regards construction of passenger coaches on the German Federal Railways,** by Rudolf KÖRNER	841	**625** .23 (43)
II. **« Shimmy » in passenger car trucks**	861	**625** .215
III. **How track is raised and reballasted in Sweden,** by TORD FOGELBERG	866	**625** .172 (485)

No. 12. — DECEMBER 1952 *(continued)*.	Pages.	Numbers of the decimal classification.
ctions on the cleaning of the outside of railway coaches	870	**625** .236
wheels dynamically balanced at Burnside shops	872	**625** .212 (73)
rsonic testing of rail ends, by C. J. CODE.	876	**625** .143 .3 (73)
THLY BIBLIOGRAPHY OF RAILWAYS	69	**016** .385 (02
LYTICAL TABLE OF ARTICLES ACCORDING TO THE DECIMAL CLASSIFICATION . .	1 to 8	...
TENTS OF THE 29TH YEAR OF THE ENGLISH EDITION	It o VII	...